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# THE GULF WAR

**AN AIRMAN'S PERSPECTIVE**

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## SDS International

Systems & Defense Services International, Inc., located in Arlington, Virginia, provides personnel, planning to satisfy international defense planning, training, and infrastructure development.

Corporate Headquarters in Arlington, Virginia, provides personnel, planning to satisfy international defense planning, training, and infrastructure development.

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International

# THE GULF WAR

**AN AIRMAN'S PERSPECTIVE**

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**About the Cover.** F-15E(2), F-15C, and F-16A(2) of 4th Wing (Provisional) based at Al Kharj AB, Saudi Arabia, flying over Kuwait oil fields following cease fire. Photo by TSgt Fernando Serna, *Airman Magazine*.

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# PREFACE

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The Soviet Revolution of 1991 made the world a safer place for some. However, for others, the end of the Cold War did not produce an automatic "peace dividend." For the small or medium size, nonaligned, or newly emerging countries; those plagued by historic divisions; and those threatened by aggressive, potentially hostile neighbors or by internal terrorists, the end to almost 50 years of East-West confrontation may have increased the threats to their stability and sovereignty. This was demonstrated by the actions of Iraq in the Persian Gulf, which produced the first of many potential major regional conflicts now boiling up from the cauldrons of history.

With the end of the Cold War, the great nations of the world are turning their attention to domestic problems and concerns. They are reducing their military forces, abandoning overseas garrisons, closing bases at home, and retooling defense industries to produce nonmilitary goods. Politicians who once found it morally imperative to support stable, friendly foreign governments now scramble to find ways to improve health care, education, and employment opportunities within their local constituencies. Diplomatic missions once devoted to forging alliances to maintain the international balance of power now function as economic emissaries, maneuvering to gain access to new markets and new suppliers of raw materials. Trade and commerce have become national passions; economic tariffs and quotas are the new major instruments of international affairs.

Force reductions and reduced forward basing, the most visible manifestations of lowered tension, were initially welcomed as a sign that the threat of all-consuming global conflict was gone. However, when these reductions are combined with new obsessions with domestic and economic affairs, some troubling security issues emerge for the less dominant states.

- **Barriers against adventurism by regional tyrants have been lowered.** Decreases in the military capability of the "world policemen" equate to increases in the military capability of irresponsible regional strongmen.
- **The diplomatic threshold for armed intervention by long-standing allies has been raised.** The United States is the only remaining superpower with quick-reaction global reach and respected global power projection capability. Now domestic constraints limit the United States' willingness and ability to take unilateral action abroad.
- **States must establish military links with regional and global partners and develop coalition plans to**

**achieve effective self-defense capability.** The United Nations remains marginally effective in deterring aggression or restoring order, and alliances and coalitions such as the one achieved for Desert Storm will become more important in resolving regional conflicts.

- **Nations need to develop strategic plans to promote force structures and training programs that will blend smoothly into regional coalition capabilities.** Reductions in the military establishments and forces of the United States limit its ability to provide partner states with modern military training and technical assistance for non-common equipment.
- **Interoperability in military expertise and equipment should be sought and exploited.** Interoperability serves as a "charged accumulator" supporting deployment of coalition forces and enhancing early combat employment capability. Compatible hardware, training, facilities, and infrastructure enhance coalition capabilities.

Within this framework of harsh new realities, nations in all regions are well advised to study the activities in the Gulf War to gain a perspective of how these events may apply to their security concerns. "The Gulf War – An Airman's Perspective" is one such look at the Gulf War, its lessons, and their potential application. This is an American airman's study . . . an overview of relevant political activities, strategic issues, operational planning, and tactical performance . . . an extract of the factors and actions that made things work, the ones that were important and should be considered as windows to the future. This perspective is divided into four main parts: What Happened – Planning, What Happened – Execution, What's Important, and What's Next. It is extracted from open source information and is not offered as a complete story in every detail, but it does focus on the important activities and events that substantially determined the outcome. More importantly, it goes one step further. It prompts the reader to draw conclusions about important variables that can and must be controlled and managed to ensure stability and security in all regions.

**What Happened – Planning** sets the stage by describing the Iraqi public and private demands, the act of aggression, and the immediate reactions of the United States and other concerned bodies and nations. After a discussion of the early preparation activities (from initial readiness into the building process), the reader is taken through the logistics and operational complexities of building and molding the coalition air forces in the theater. The second part of the planning section delves into the war-planning activity at the



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strategic, operational, and tactical levels. The air campaign planning process is presented from its conception through the organizational issues to the establishment of objectives and schedules. Training aspects are also highlighted. It ends with a readiness conclusion and a brief description of Iraqi intent and objectives on the eve of war.

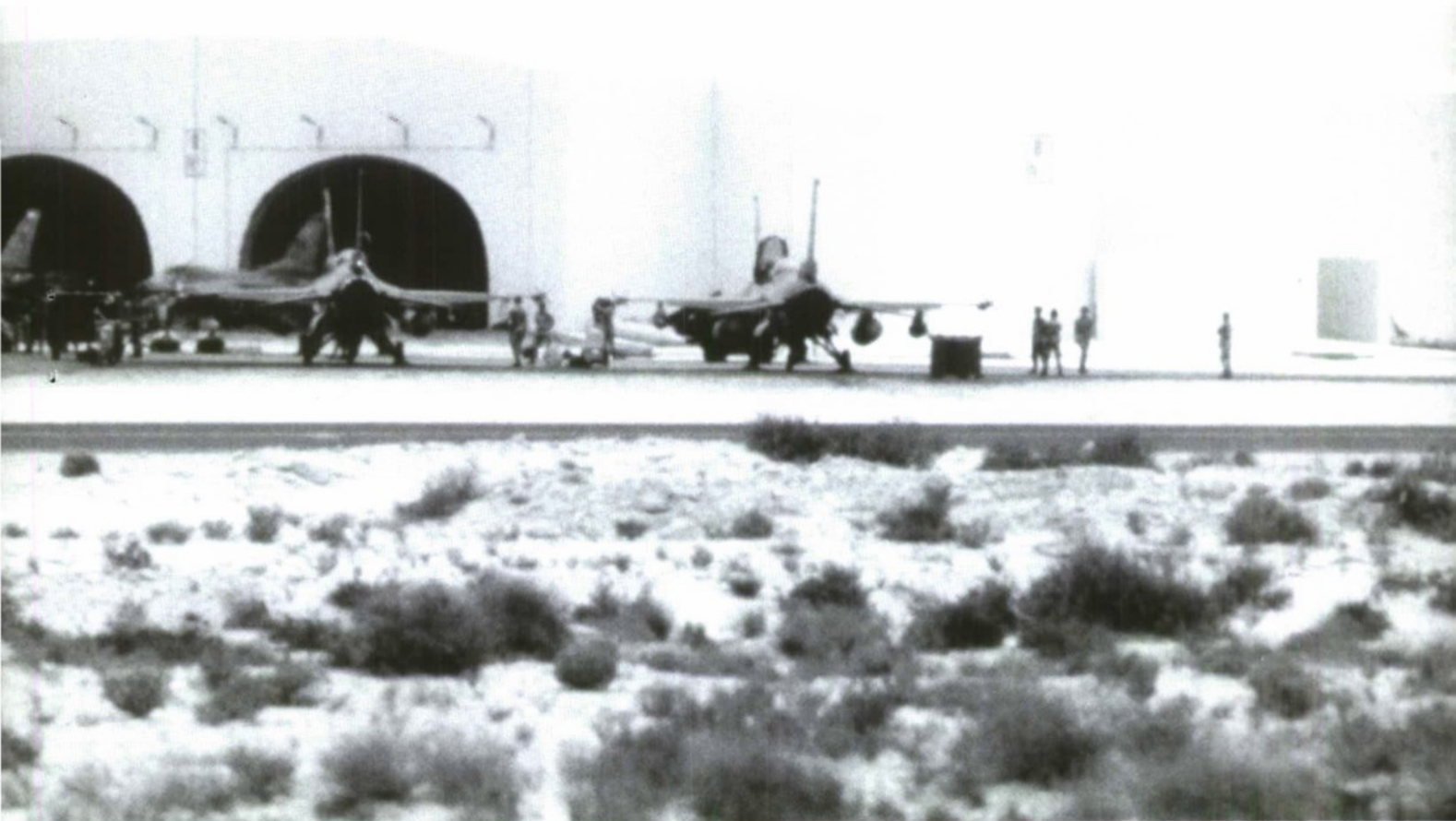
**What Happened – Execution** provides a blow-by-blow account of the first 3 days of the war and the missions that characterized its overall prosecution. Following Day 3, the patterns of the air campaign were established and the discussions move toward specific events and activities in the remainder of the war such as how the Iraqis lost their air force, the "Great Scud Chase," and the destruction of a field army. Throughout, the report brings forth the pluses and minuses as they emerge through the fog of war. The execution section concludes with a final review of the state of the Iraqi army.

**What's Important – My Perspective** is the analysis of what happened and, more importantly, why it happened. It extracts and highlights the variables that made a difference in coalition capability. It offers thoughts on collective will and leadership

and detailed descriptions of four control variables – technology, planning, training, and interoperability. Each variable and its components are related to the war effort so a cause and effect relationship can be concluded and understood.

**What Now** is designed to cause reflection on the events as they may apply to future security in any region. This treatment puts forth the concept that the variables should be planned and controlled within the framework of intranationally sponsored regional coalitions. It highlights a call for action – to start now, to plan now, to invest now – in the emerging order of regional coalition.

We must not proceed further without recognizing the sacrifices of the brave men and women from around the globe who, in uniform and in mufti, contributed to the Coalition's overwhelming success in the Gulf War. Regrettably, this accounting is unable to address their individual and collective sacrifices and achievements in appropriate detail. I apologize for my admittedly "American Air Force" bias in advance and assure one and all that I honor their contributions and salute them as valued friends and partners in our undisputable victory over tyranny.





# ***Chronology of Major Events***

## ***Building the Coalition***

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### **August**

- 2 Iraq invades Kuwait. U.S. freezes Iraqi assets, proposes economic boycott. UN Security Council Resolution (UNSCR) 660 calls for Iraq's immediate, unconditional withdrawal.
- 4 EEC leaders agree to impose collective economic sanctions on Iraq.
- 6 UNSCR 661 imposes embargo on trade with Iraq and Kuwait. King Fahd of Saudi Arabia invites U.S. to deploy forces to the Kingdom.
- 8 Iraq annexes Kuwait. First U.S. military forces arrive in Saudi.
- 9 UNSCR 662 states Iraqi annexation of Kuwait illegal, calls on members to refuse to recognize the action. Saddam Hussein seals Kuwaiti and Iraqi borders to departees.
- 10 Arab summit in Cairo votes to send Arab military forces to Saudi and the Gulf States.
- 12 First UK forces arrive in Oman. First Egyptian forces arrive in Saudi.
- 14 First Syrian forces arrive in Saudi.
- 17 Bagdad threatens to use Westerners in Iraq and Kuwait as human shields against attack.
- 18 UNSCR 664 demands Iraq release all hostage third country nationals.
- 20 Saddam Hussein moves hostages to Iraqi strategic and military installations.
- 21 Western European Union meets in Paris, supports the deployment of UK, French, and Dutch forces to the Gulf.
- 23 UNSC members agree to put military forces in the Gulf under UN umbrella.
- 25 UNSCR 665 authorizes member states to use "such measures as may be necessary" to enforce trade embargo. First French troops arrive in U.A.E.

### **September**

- 14 Iraq soldiers enter homes of French diplomats in Kuwait, abduct 3 Frenchmen.
- 16 UNSCR 667 demands release of all hostages, respect for diplomatic immunity.
- 20 Iraq threatens to destroy all oil fields in the Gulf if attacked.
- 25 UNSCR 670 imposes air embargo on Iraq.

### **October**

- 16 Pakistan agrees to deploy armored division to the Gulf.
- 23 President Bush declares there will be no settlement until Iraq withdraws from Kuwait.
- 31 Egyptian President Mubarak rejects Arab summit before Iraq withdraws from Kuwait.

### **November**

- 5 U.S. and Saudi leaders agree on chain of command for forces in Gulf: joint command on Saudi soil; U.S. to command any offensive beyond Saudi borders.
- 8 President Bush announces the dispatch of more forces to the Gulf.
- 28 UNSC is shown evidence of Iraqi atrocities in Kuwait.
- 29 UNSCR 678 authorizes use of all necessary means to uphold and implement UNSCR 660 if Iraq has not withdrawn from Kuwait by 15 January 1991.

### **December**

- 22 Iraq announces it will not give up Kuwait and will use chemical weapons if attacked.

### **January**

- 6 Saddam Hussein announces his people are ready for the "Mother of All Battles."
- 12 Congress endorses President's authority to go to war.
- 17 Air campaign begins war to free Kuwait.





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# ***What Happened – Planning***

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## ***Threat***

In a televised National Day speech on 17 July 1990, Iraq's dictator, Saddam Hussein, threatened to take strong action against Kuwait and the United Arab Emirates (UAE) if they failed to meet specific Iraqi demands. Those demands, which had been made repeatedly within Arab circles over the preceding 6 months, included (1) forgive Iraq's debt from its war with Iran, (2) reduce oil production to raise international market prices, (3) compensate Iraq for its war sacrifices "on behalf of the Arab world," and (4) in the case of Kuwait, make restitution for the income from oil it allegedly siphoned from Iraq's portion of the Rumaila oil field.

While observers pondered the significance of Hussein's outburst, the Iraqi strongman acted. Within a week, satellite photographs showed two Iraqi armored divisions newly camped on Kuwait's northern border. The United States (U.S.) provided proof of Iraq's buildup to Kuwait, but the Emir of Kuwait, like many others around the world, believed Saddam was merely playing a bluff. The UAE took Iraq's buildup more seriously and requested that the United States Air Force (USAF) provide two KC-135 air refueling tankers to aid the Emirates' Mirage fighters in maintaining around-the-clock patrol over offshore oil platforms. The USAF KC-135s began operations in the UAE on 24 July; however, Iraq did not perceive this as a staunch U.S. commitment and paid little heed.

## ***Invasion***

Iraq's invasion of Kuwait began at 0100 hours on Thursday, 2 August 1990. Three of Saddam's Republican Guard divisions crossed the border on the ground while a fourth launched a helicopter assault against the capital. Kuwait City fell by 0700 that morning. The Kuwaitis had been unwilling to believe that Saddam would commit such a blatant act of aggression and failed to place their troops on alert. Many fell into Iraqi hands near their normal duty posts rather than in prepared forward positions.

The Kuwait Air Force (KAF) managed to get six Mirages in the air in the early morning. These downed a number of enemy helicopters before sunrise, when Iraqi fighters entered the battle and attacked all three Kuwaiti air bases. During the day, Iraqi tanks reached the airfields. Most of the KAF

escaped to Saudi Arabia, but those airmen who remained were captured and sent to Iraq, where they received brutal treatment at the hands of their captors.

It appeared that Saddam's forces might also round up the American Embassy staff and more than 2,000 Americans working in Kuwait. President George Bush reacted quickly. That same day, he met with General H. Norman Schwarzkopf, Commander in Chief (CINC) of the United States Central Command (CENTCOM). He warned Schwarzkopf that he should be prepared to fight if Iraq took the embassy staff hostage or extended its invasion into Saudi Arabia. While the general began to examine possible courses of action, the President began flexing the diplomatic muscle of the American government to mobilize widespread international shock into effective opposition.

## ***Reaction***

Two days later at Camp David, Schwarzkopf and Lieutenant General Charles A. Horner, Commander of CENTCOM's Air Force Component, Central Air Forces (CENTAF), briefed the President on possible military responses. By that time, the Iraqis had moved approximately 11 divisions (nearly 200,000 men) into or near Kuwait. Some of these were in threatening positions on Kuwait's border with Saudi Arabia. Another 800,000 Iraqis remained under arms at home, where that country's armed forces equaled fully half of the U.S. worldwide active duty force.

When Hussein launched his attack, the U.S. had few U.S. forces in the Middle East. The U.S. European Command (EUCOM) had 14 F-111s and four F-16s in Turkey, but it was not known whether the Turks would allow air attacks against Iraq from their soil. The USAF and U.S. Marine Corps (USMC) had prepositioned military supplies at Oman, at Diego Garcia in the Indian Ocean, and at Guam in the Pacific for just such a contingency. These supplies, however, were of little value without the troops to employ them, and the troops needed bases from which to operate.

For the USAF, supply was not immediately critical. USAF tactical fighters such as the F-15 flown also by the Royal Saudi Air Force (RSAF) and the F-16 flown by the Bahrainis



and Egyptians could stage to and operate from host nation facilities, sharing resources in support of a common cause. But CENTCOM had to look at the prospect of a major, possibly long-term conflict. Although U.S. deployment forces were readily available and two U.S. Navy (USN) aircraft carriers would reach the Red Sea and the Gulf of Oman in a few days, there was little Schwarzkopf and Horner could do unless Saudi Arabia or other Middle Eastern nations were willing to accept U.S. forces.

Executive decision-making was swift and decisive. The President sent Schwarzkopf, Horner, and Secretary of Defense Richard B. Cheney to Saudi Arabia to persuade King Fahd to allow the U.S. to deploy one quarter of a million U.S. military personnel to the Kingdom. Presented with satellite photography that underlined the threatening posture of the Iraqi deployments on his frontier, King Fahd, on 6 August, invited the U.S. to dispatch its forces. The other Gulf nations soon followed the Saudi lead and opened their bases to the forces of supporting states.

In a complementary effort, the Department of State, under Secretary James A. Baker, launched a non-stop effort to mold diplomatic opposition to Iraqi actions into a basis for a broad coalition of nations prepared to take resolute action in support of democratic principle. The result was a consensus unprecedented in history.

Having gained King Fahd's concurrence for the deployment of U.S. forces, Schwarzkopf returned to CENTCOM Headquarters in Florida, where he could more easily initiate the deployment of forces and communicate with Washington. He left Horner in Saudi Arabia to handle the receiving end (most early arrivals would be USAF units). Horner located his headquarters in Riyadh, the capital of Saudi Arabia, about 300 miles south of Iraq and 200 miles west of the Arabian Gulf. To orchestrate the receipt and bed down of what would turn out to be over 650,000 Coalition force deployers into the Middle East area of responsibility (AOR), Horner established a CENTAF planning group under his deputy, Major General Thomas R. Olsen.

## Preparation

Since its creation in 1983, CENTCOM had faced several major obstacles in trying to prepare for operations in the Middle East. Arab nations had neither permitted CENTCOM to locate its headquarters in the region nor participated in developing plans to position forces there. As a result, U.S. planners did not know which airfields or installations would be opened to deploying forces. This made realistic planning extremely difficult. As a unified command with no assigned combat elements of its own, CENTCOM relied on the individual U.S. military services to furnish the war fighters to execute its operation plan. The process of mobilizing forces from different services and melding them into a unified battle team hinged on having a comprehensive, detailed, time-phased force deployment list that could be used to coordinate and integrate the movement of units, equipment, and supplies. Without host-nation agreement on bed-down locations,

CENTCOM's previous planning, for all its detail, had been little more than notional.

CENTCOM improvised. While the planning staff in Florida coordinated around the clock with counterparts in the separate services to earmark specific forces needed, CENTAF, working through the U.S. Transportation Command (TRANSCOM), took primary responsibility for arranging airlift for the hundreds of thousands of U.S. troops and their initial equipment, supplies, and munitions. At the same time, Horner and Olsen had to develop bed-down plans to accept and support the incoming forces as they arrived in the AOR.

The deployment of so many aircraft and troops to the Arabian Peninsula proceeded more quickly than smoothly. The dimensions of the problem grew larger each day as more nations joined in the Coalition. This created enormous difficulties for the small in-country planning staff, which constantly had to shuffle and adjust schedules, sometimes even changing the destinations of deploying fighter squadrons while they were en route. But it was welcome news to the senior commanders, who saw in the massive force buildup – with all its frustrating complexities – the means to end the Iraqi occupation of Kuwait.

## Airlift

The U.S. deployment to the AOR following King Fahd's decision was unprecedented in its combination of speed, size, and distance. Called Operation Desert Shield to emphasize its defensive purpose, it involved moving most of the quarter million U.S. troops, the thousand aircraft, and the millions of tons of equipment and supplies some 7000 miles over the next 3 months.

The burden of airlifting troops and urgently needed equipment fell on the Military Airlift Command (MAC). To carry out the task, MAC called on both its own long-range

### U.S. Airlift

|              | KC-10  | C-141   | C-5     | CRAF    |
|--------------|--------|---------|---------|---------|
| MISSIONS     | 380    | 8,320   | 3,770   | 3,390   |
| PASSENGERS   | 1,110  | 95,130  | 87,200  | 312,080 |
| CARGO (TONS) | 12,180 | 186,290 | 227,260 | 146,260 |
| % OF PAX     | < 1    | 19      | 17      | 63      |
| % OF CARGO   | 2      | 29      | 41      | 27      |

**Strategic Airlift Moved 15 % of All Dry Cargo and 90+ % of the People to the Gulf**



military transports (C-5s and C-141s) and on commercial airliners from the nation's Civil Reserve Airlift Fleet (CRAF). While MAC dedicated its assets primarily to cargo, the CRAF delivered nearly two-thirds of all military personnel transported to the AOR. The Strategic Air Command's (SAC) small fleet of KC-10 dual-purpose tanker-transport aircraft made a valuable long-lift contribution, refueling fighters en route and landing with them at destination to offload unit maintenance personnel and support equipment.

Within the AOR, over 200 C-130 tactical transports, operated by several members of the Coalition, proved invaluable in shuttling personnel and cargo across the broad expanses of desert. These flights permitted strategic lift assets to limit their operations to a few key airheads for maximum efficiency. The C-130s were also instrumental in redeploying forces within the theater as required by changes in operational plans and base loading. When combat began, the operational variants (including tankers, command and control aircraft, electronic warfare assets, and Special Operations Command (SOC) gunships) participated actively and effectively in the fighting.

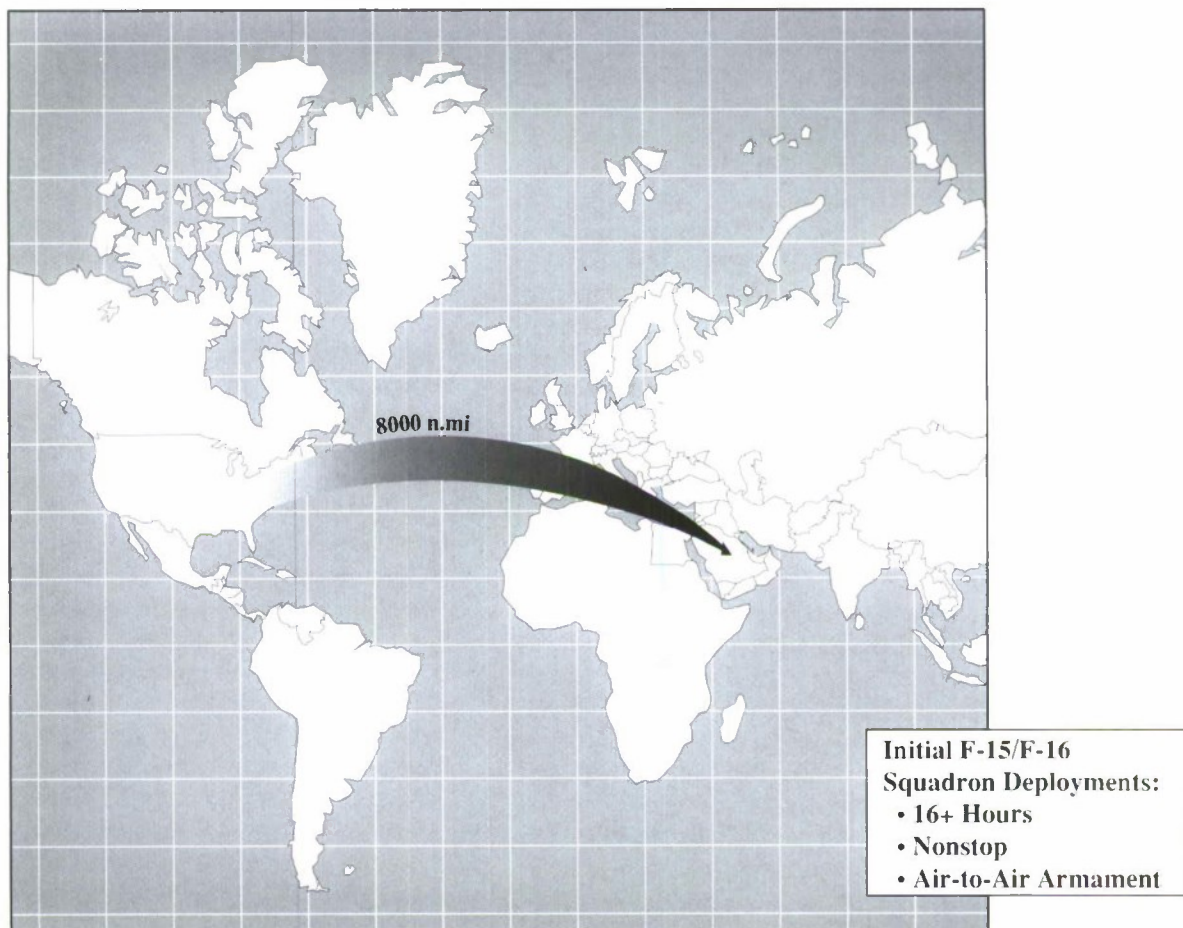
This massive airlift effort ultimately became the largest aerial movement of forces and supplies in the history of warfare. It contributed significantly to the establishment of

the Coalition and to its ultimate success in battle. The ability of airlift alone to sustain deployed forces over an extended period of time was demonstrated conclusively and put out the message to other potential aggressors that America's friends would never be too distant to aid.

## ***Bed Down***

The first USAF fighter contingent to reach Saudi Arabia was a squadron of 23 F-15C air superiority aircraft from Langley Air Force Base, Virginia. These aircraft landed at Dhahran Air Base on the Arabian Gulf coast during the afternoon of 8 August, within 2 days of King Fahd's offer of basing. Supply requirements for these aircraft were minimal because the RSAF operated a force of some 29 F-15C/D aircraft from Dhahran. Refueled seven times en route by SAC KC-10s, the F-15s arrived fully armed and prepared to fight their way into the theater if necessary. The next day a second squadron of Langley F-15Cs arrived. CENTAF now had muscle in place to help the RSAF defend the Kingdom against air assault and to provide top cover for the enormous airlift operation beginning to get under way.

## ***The Air Bridge***



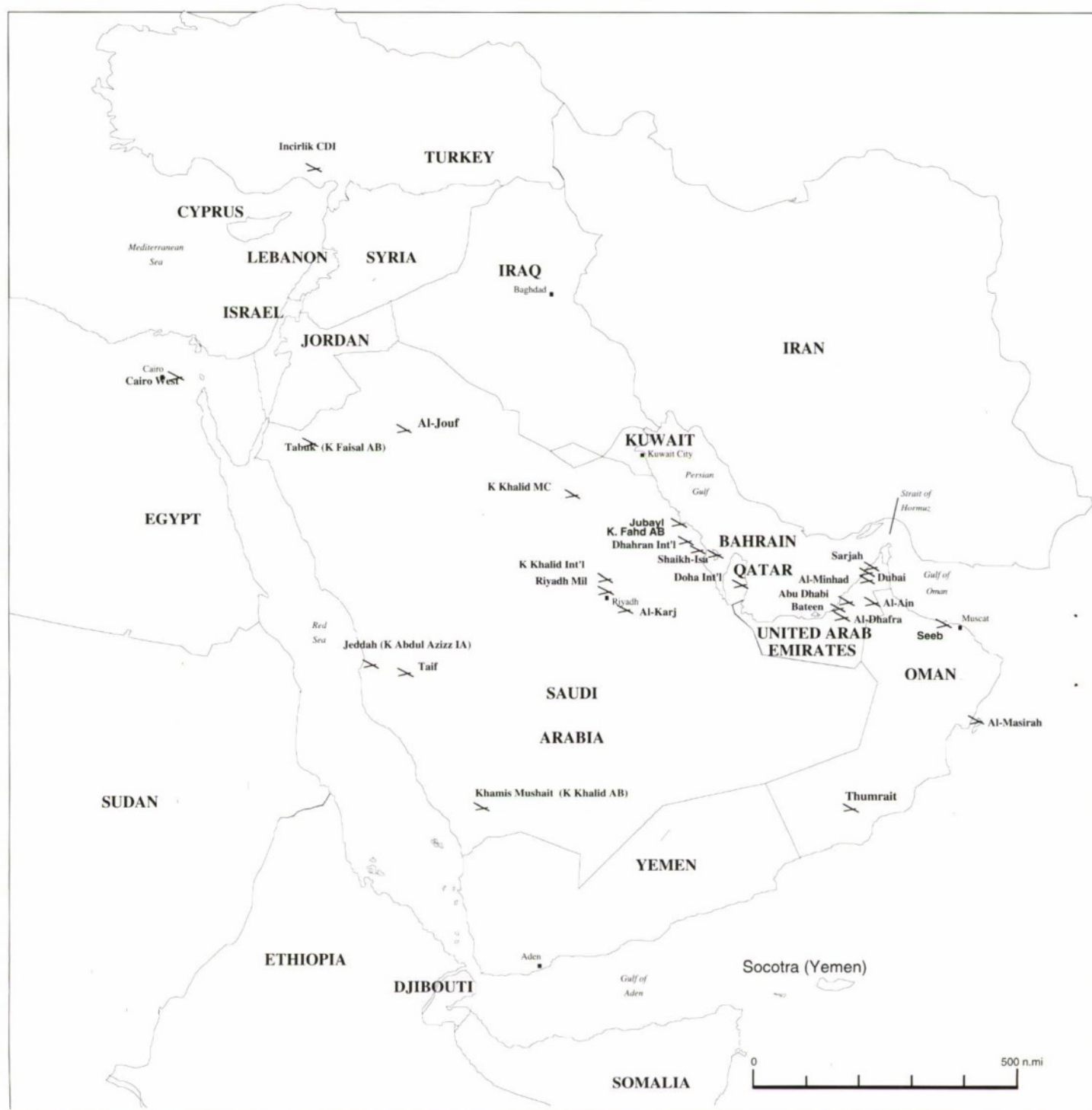


Soon afterwards, USAF F-111s and F-16s began arriving from bases in the U.S. and Europe, giving CENTAF an air-to-ground precision bombing capability deemed critical to blunt any early cross-border land incursion Iraq might attempt against the Kingdom. The F-111s deployed to Taif in the western part of Saudi, where they could attack northward against the Iraqis or southward against any Yemeni force that might move against the Kingdom in support of Iraq. The F-16s went to Al Dhafra AB in the UAE, where their multirole capability enabled them to meet several CENTAF needs: provide an air-to-air buffer for the Gulf states against Iran

(whose intentions remained uncertain at that time), augment U.S. Navy fleet air cover in the confined waters of the Gulf of Oman if necessary, and be prepared to conduct air-to-surface attacks against any forces moving against the Kingdom from the north or east by land or sea.

The initial trickle of deploying air assets soon became a flood. For CENTAF planners in Riyadh, the most pressing problem was how to bed down and organize a steadily increasing flow of forces. The difficulties involved in orchestrating the airlift and adjusting to a hostile climate were daunting enough, but over the entire theater hung the Iraqi

## Coalition Main Airfields



\*threat. On 12 August, Schwarzkopf's combat analysis group concluded that U.S. and Saudi ground forces were not sufficient to defend Al-Jubail, a coastal refinery center some 130 miles south of the Kuwaiti border, against an attack by (only) three Iraqi divisions. This threat led Schwarzkopf to push for the deployment of combat forces – both air and ground – at the expense of support forces. This opinion was shared by Horner, who reflected after the war:

"The idea was that we were to deter an Iraqi invasion of Saudi Arabia and that, if an invasion did come, we were to defend . . . Those were some of the worst nights of my life, because I had good information as to what the Iraqi threat was. Quite frankly, we could not have issued speeding tickets to the tanks as they came rolling down the coastal highway. It was an opportunity the Iraqis did not take, but every night we'd get more forces, and we'd sit down and build a game plan of what to do if this was to be the night we came under attack."

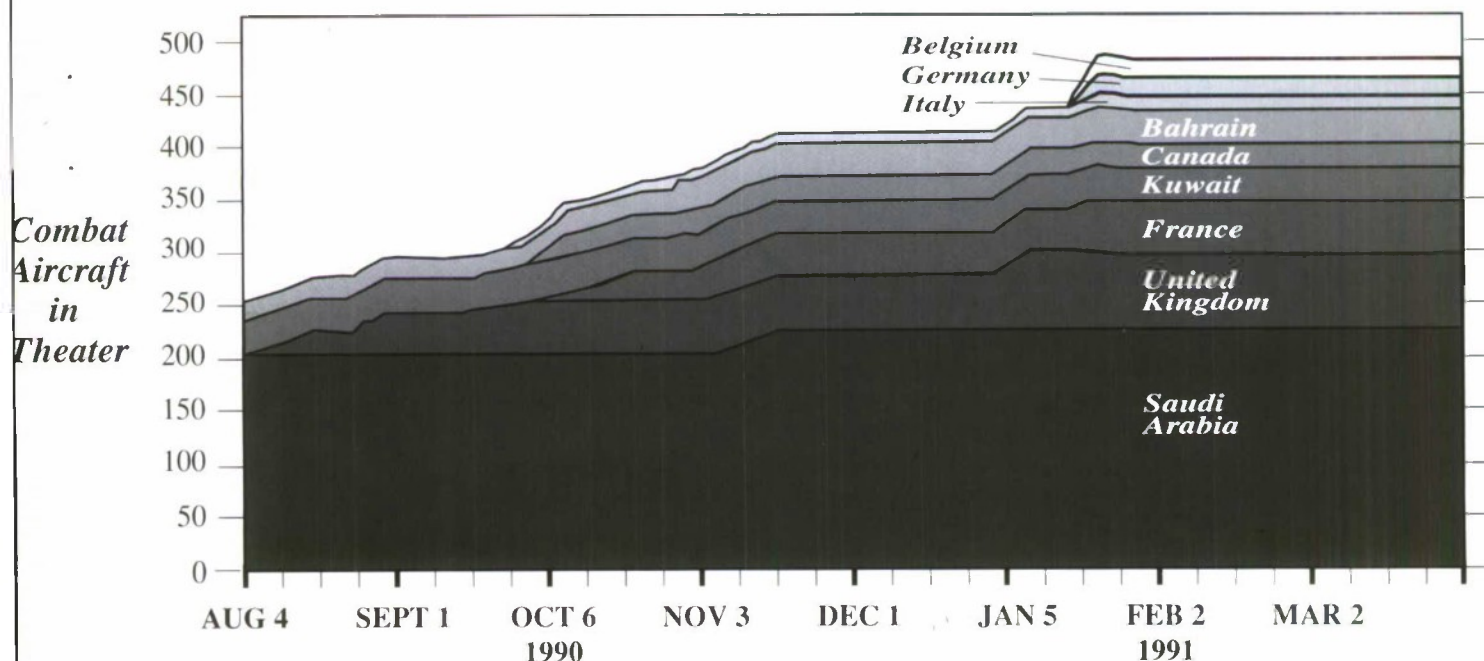
By mid-September, nearly 700 USAF aircraft had deployed to airfields on the Arabian Peninsula. Combined with the over 100 USMC assets operating out of Bahrain, this presence doubled the number of military aircraft normally available to Saudi Arabia and its neighboring states – Oman, the UAE, Qatar, and Bahrain. In addition, nearly 200 aircraft from Britain, France, Canada, and Italy joined U.S. and Arab aircraft at these bases. To round out the picture, throughout the fall of 1990 the U.S. Navy maintained three carriers in the Eastern Mediterranean, the Red Sea, and the Gulf of Oman, giving the Coalition immediate access to almost 200 more warplanes.

CENTCOM's initial concern was defense of the Kingdom and the early forces gathering there. As the buildup

progressed, however, Schwarzkopf and his senior subordinates were able to begin focusing on how to dislodge Iraq from Kuwait if diplomatic means proved fruitless. Saddam's continuing military entrenchment in the tiny Sheikdom soon convinced analysts that still more forces would be needed. On 8 November, President Bush announced a commitment of additional U.S. personnel. This was soon followed by similar announcements from other Coalition leaders. Thus began a second deployment phase, which continued through December and January and stretched base infrastructure to its limits. In all, another 800 U.S. aircraft eventually arrived in the theater along with an additional quarter million U.S. troops. These came mostly from Europe, where reduced East-West tensions had lessened the need for a large U.S. military presence.

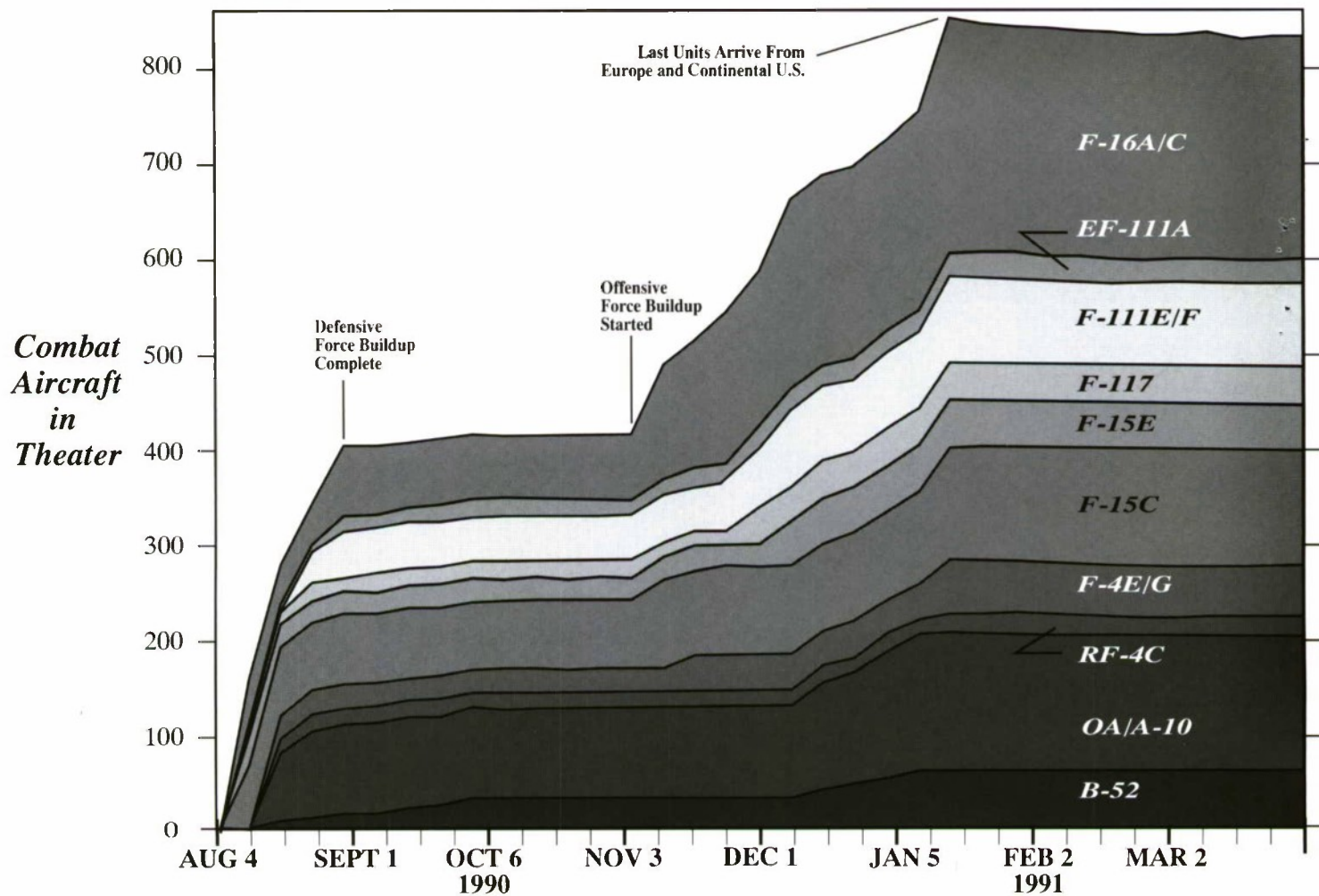
Fortunately, during the preceding 30 years, the Coalition's oil-rich hosts had completed major engineering projects on the Peninsula that comprised some of the most modern and capable facilities in the world, including airfields with capacity far in excess of that required to support their own forces. The Saudi infrastructure also included a highly sophisticated telecommunications network as well as the capability to refine petroleum products in sufficient quantity to meet almost all Coalition force needs. This so-called "overbuilding" proved to be a remarkably astute investment, significantly reducing overall logistics requirements for the forces deployed to defend the Kingdom. The commonality of weapon systems, supply requirements, munitions, training practices, and command and control procedures shared by many of the Coalition members further reduced the problems of fitting together the pieces of the puzzle. Even so, the second deployment phase required shuffling entire squadrons to new locations among the more than 20 airfields supporting the Coalition effort.

## *Allied Tactical Air Forces*

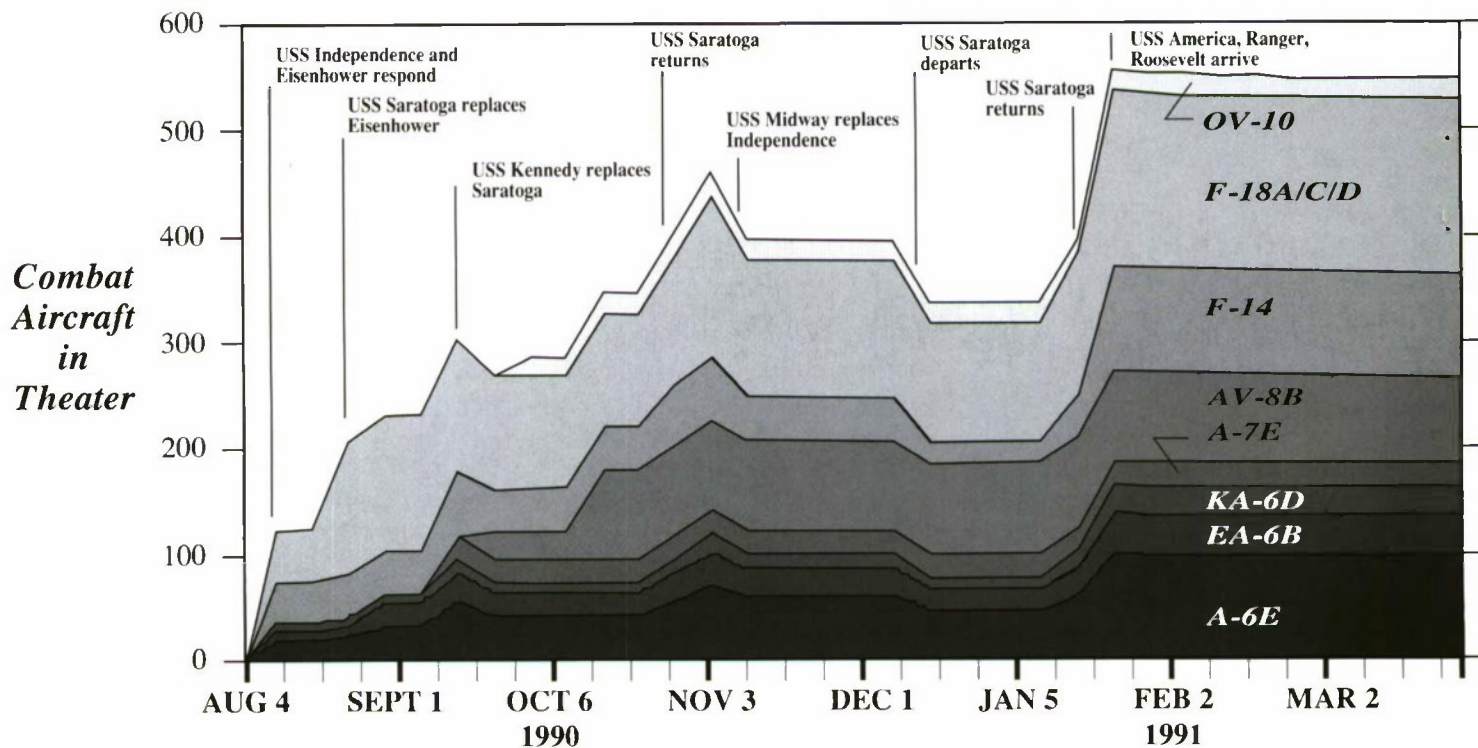




## USAF Tactical Air Forces



## USN/USMC Tactical Air Forces



## Air Forces

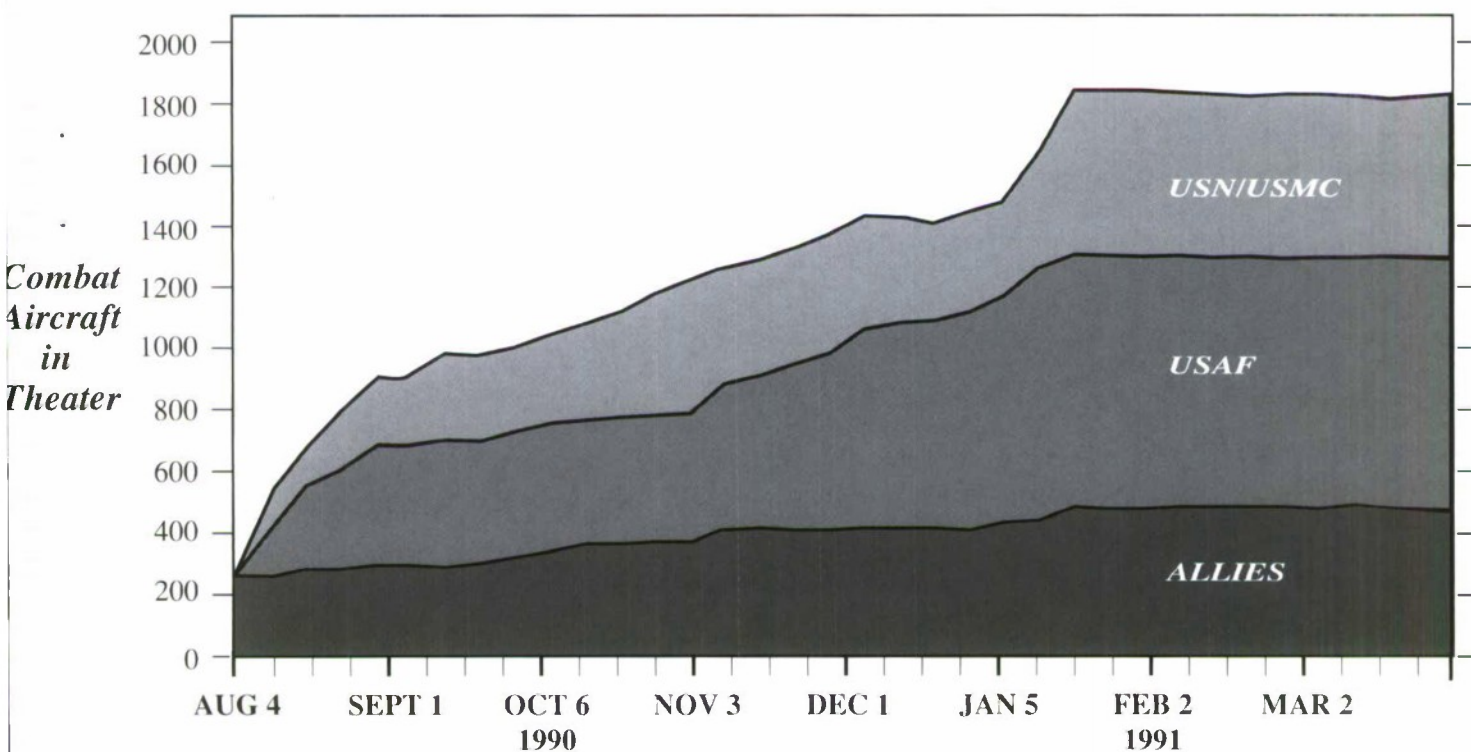
By mid-January 1991, CENTAF had available some 2,400 aircraft including U.S. active duty, guard, and reserve aircraft and Coalition aircraft. More than 1,800 of these were fighter, bomber, attack, and reconnaissance aircraft (over three-fourths were U.S.). USAF fighter and bomber assets totaled more than 800. The combined USN and USMC numbers exceeded 500 and were essentially matched by the air forces of the other Coalition members, plus the combat assets of the SOC. In addition to the firepower available from its six aircraft carriers, the USN committed two battleships, 16 cruisers, numerous destroyers, and submarines. Some of these ships carried Tomahawk cruise missiles and also served as launch platforms for remotely piloted vehicles (RPVs).

Supplementing the forces assigned directly to CENTAF, U.S. European Command also committed more than 120 aircraft from Incirlik Air Base, Turkey, to the support of CENTAF. The forces available from Incirlik included 39 F-16s, 27 F-15s, 18 F-111s, and many specialized air assets. These forces prepared to launch attack and special operations from Turkey missions from the other flank into Iraq. However, they did not get permission from Turkey for the attack operations until the opening of the air campaign in January. Special operations from Turkey remained taboo throughout the conflict. The forces in Turkey provided an additional arm of the air campaign plan and ultimately enabled CENTAF to apply pressure on Iraq from two fronts at the same time.

The USAF contributed a lion's share to the Coalition air effort, committing approximately 27 percent of all its worldwide combat aircraft to the campaign. These included the majority of USAF's specialized assets such as the F-4G "Wild Weasel" surface-to-air missile (SAM) killers, the F-117 stealth fighters, the EF-111 electronic warfare (EW) jammers, and the precision-guided munition (PGM) capable aircraft. Almost 80 percent of USAF's strategic airlift was dedicated to supporting operations in the Middle East, and 50 percent of its tanker assets were involved there continually. As for munitions, 63 percent of the laser-guided bombs (LGB), 52 percent of the high-speed anti-radiation missiles (HARM), and 43 percent of the cluster bomb units (CBU) in the USAF inventory went to the combat theater.

The extended time allowed for this massive buildup enabled the air campaign planners to dedicate highly specialized aircraft types to specific missions, permitting aircrews to concentrate on refining and optimizing their procedures and techniques for maximum effect. If the Iraqis had moved against Saudi in the early days of the crisis, the mission uncertainties and the effort to blunt the moving land battle would have been predominantly relegated to the true multimission aircraft in theater: the F-16s, British Jaguars, and aged RSAF F-5s, augmented by F-18s as they arrived. Given the luxury of time in which to position relatively large numbers of single-role assets (such as the F-117, F-15C/D,

*Total Coalition Tactical Air Forces*





F-111, Tornado IDS, and A-10), planners gradually were able to download multiple tasking from the "swing" fighters and apply the focused strengths of the special-mission aircraft to those tasks for which they were uniquely well suited. The mix of Coalition aircraft types and capabilities further presented Iraqi planners with a bewilderingly array of threats. That they underestimated all of them was surprising but beneficial.

## ***Assignment of Responsibilities***

Fortunately Schwarzkopf realized that he could extract maximum effectiveness from the air assets by giving a single manager the responsibility and authority for developing and executing CENTCOM's air campaign. This would give air operations a clear focus and ensure that they supported his overall military strategy. Accordingly, he designated Horner as Joint Force Air Component Commander (JFACC) and instructed him to develop plans for an air campaign to achieve the objectives President Bush had established. This was made clear in a CENTCOM Operations Order issued on 27 August 1990, the day Schwarzkopf returned to the AOR:

"The JFACC will conduct, in the near term, a theater air campaign to seize the initiative by attacking, isolating, and incapacitating the Iraqi military leadership and destroying Iraq's ability to conduct military operations."

That single sentence may have been the most significant directive of the entire conflict. In a few dry, brief words, it served notice that Schwarzkopf intended to employ assigned forces in accordance with the dictates of his professional judgment on how best to achieve military success. The CINC intended to command, not serve as a coordinator of strategies independently developed by service staffs far removed from the battle.

Equally important was the fact that this directive placed all participating air assets under the control of a single airman for the first time in the combat history of American aviation. This set the stage for air power to be massed and focused as never before with all its diverse elements orchestrated in unison to accomplish a single set of objectives. While there was reluctance on the part of some to accept the abrupt removal of "service prerogative" from the arena of theater warfare, staunch support for Schwarzkopf from President Bush, Secretary Cheney, and Chairman of the Joint Chiefs of Staff General Colin L. Powell made it clear that centralized planning, direction, and control with decentralized execution would be the order of the day. Within the AOR, Schwarzkopf's equally staunch support for Horner, as well as the concern with results and the disdain for image, brought all but a few diehards to the joint table.

With his authority and responsibility clearly established, Horner's tasks were intimidating: (1) develop a plan for the

use of Coalition air power that would achieve the assigned objectives (and in the process deliver on the promises of exceptional effectiveness long voiced by advocates of centrally controlled joint air operations) and (2) establish the mechanisms and procedures necessary to execute the plan. Fortunately, Horner was not one to be intimidated. The result was an air campaign that in concept and execution exceeded the expectations of perhaps everyone in the world but its designers.

## ***Conceiving the Air Campaign***

In the first days following the Iraqi invasion of Kuwait, USAF planners from Checkmate, the Air Force's small Pentagon-based war-gaming think tank, developed a rough conceptual plan for using air power to force Iraq to abandon Kuwait. On 8 August, this "intellectual exercise" took on a new significance when Schwarzkopf returned from Saudi and called on the Air Staff for assistance in developing air campaign options. With Horner and Olsen wrapped up in Riyadh on Coalition-building and bed-down issues and the staff in Florida working around the clock on deployment plans, CENTCOM at this time lacked the manpower to conduct preliminary planning for the kind of air operations Schwarzkopf and Horner believed would be necessary.

The Checkmate product was a conceptual plan nicknamed *Instant Thunder*. At its heart lay the concept of conducting "powerful and focused air attacks on strategic centers of gravity." The range and precision of air power would be used in "round-the-clock operations against enemy leadership, strategic air defense, and infrastructure" in order to achieve "strategic paralysis and air superiority." Rejecting the "gradual escalation" and "force-versus-force" concepts of the Vietnam War era, the plan called for massive air attacks from the outset against "target sets" – groups of interrelated and interdependent target types. The target sets consisted of the main facilities and establishments used by the Baghdad regime to exercise its military power and maintain control over the Iraqi population. Instead of going head-on against occupation forces in Kuwait, air resources would be directed against the Iraqi instruments of command and control, against its capacity to produce military goods and services, and against its transportation network.

Schwarzkopf was briefed at his Florida headquarters on 10 August, and he endorsed the plan as the conceptual framework on which to begin building an offensive air campaign. Although rough and simplistic, the plan called for bold use of massed air power, which mirrored the CINC's own views on the employment of force. Furthermore, Schwarzkopf knew it would be months before he could muster a large enough army in the desert to initiate an offensive land campaign. An air campaign, following the concepts outlined in *Instant Thunder*, could bring force to bear much more quickly. As a final



selling point, the plan was generally consistent with ideas that Horner had outlined when he, Schwarzkopf, and the CENTCOM Army Component Commander (ARCENT), Lieutenant General John Yeosock, had met earlier to war-game a potential Middle-East scenario.

On 19 August, key members of the Checkmate staff briefed their plan in detail to Horner and on the following day to Brigadier General Buster Glosson. Both generals found points of interest in the plan, but also some very significant weaknesses. It underestimated the strategic balance on the Arabian Peninsula and the resulting logistics problems confronting CENTAF. It was felt to be overly optimistic in several areas: its assessment of the number of targets that needed to be hit to influence the Baghdad regime or significantly affect Iraqi military capabilities, the amount of time that would be required for such an ambitious plan to achieve success (5 to 6 days), and its limited treatment of counter air operations. In general, it gave little recognition to the potential staying power of the adversary. Also, by paying only limited attention to the ground threat, it was not guaranteed a particularly warm reception by the Saudis. Finally, it left virtually no options for follow-on activity in the event of failure.

A coherent and flexible air campaign plan was needed immediately, providing perhaps the only viable offensive card to play early, if it became necessary. Horner captured the air power architects and immediately chartered his own operational planning group in the AOR under the direction of Glosson.

When Horner met with President Bush on 4 August, he was given concise direction: develop an executable plan by mid-September to achieve the President's objectives. The President also presented four broad planning instructions: (1) force Iraq out of Kuwait, (2) destroy Iraq's nuclear/biological/chemical weapon capability (5- to 10-year setback), (3) hold the loss of military personnel to a minimum (end the war quickly) and (4) minimize civilian casualties.

The President's political objectives were translated directly to CENTCOM's military objectives and operational concepts for the air campaign. In the plan's last formulation before the onset of the war, the resulting military operational objectives were (1) destroy Iraqi military capability to wage war; (2) gain and maintain air superiority; (3) cut Iraqi supply lines to the Kuwait Theater of Operations (KTO); (4) destroy Iraq's chemical, biological, and nuclear capabilities; (5) destroy the capabilities of the Republican Guards, Saddam's "elite" ground forces; and (6) liberate Kuwait City with Arab forces.

## ***Desert Storm Objectives***

### ***Political Objectives:***

- The complete, immediate, and unconditional withdrawal of Iraqi forces from Kuwait
- Restoration of Kuwait's legitimate government
- Protection of American citizens abroad
- Promoting the security and stability of the Persian Gulf

### ***Additional Constraints:***

- Minimize Coalition casualties and collateral damage from military operations
- Discourage Israeli military involvement

### ***Resulting Military (Operational Campaign) Objectives:***

- Attack Iraq's political-military leadership and command, control, and communication system
- Gain and maintain control of the air
- Cut Iraqi supply lines
- Destroy Iraq's chemical, biological, and nuclear capabilities
- Destroy Republican Guard forces in the KTO
- Liberate Kuwait City with Arab forces



# ***Building the Air Campaign Plan***

Upon receiving his guidance from Horner, Glosson reached out and assembled his own collection of operational and planning specialists, calling on units and staffs worldwide to gather in experts such as graduates of the USAF Fighter Weapons School. Restricted to a small group of individuals at first, this secretive cadre grew to reflect the diverse composition of the Coalition, with representatives from all four of the U.S. services and several of the Allies. Development of the air campaign plan demanded stringent security precautions, so the planning group worked in a separate, closely guarded area in the basement of RSAF Headquarters in Riyadh. This facility was subsequently dubbed the "Black Hole" by other staff members in recognition of its similarity to the hypothetical celestial body of the same name – things went in but nothing came out. The name stuck.

In spite of its identifiable deficiencies, the Checkmate effort contributed. It helped convince national leadership of the potential impact of a strategic air campaign, and it provided some preliminary intelligence gathering and analysis. This reduced the initial work load for the planning team and kick-started the planning effort. Glosson retained three of the Checkmate briefers for his own staff and maintained close contact with Checkmate in Washington to exploit the organization's swift access to national intelligence products.

Over the ensuing weeks and months, the Black Hole team developed a four-phase air campaign to support CENTCOM's military objectives. This campaign plan, summarized below, was constantly expanded and refined as intelligence sources identified more Iraqi pressure points to target and the Coalition air forces grew steadily stronger.

*Phase I* – The "Strategic Air Campaign" was designed as a 2- to 3-week concentrated effort to cripple Iraq's political and military leadership, incapacitate and demoralize Iraq's key military forces, and destroy selected infrastructure. Aimed at the heart and brain of Saddam's war-making capability, this phase focused on target sets throughout the country, particularly in and around Baghdad, that the planners considered crucial to Hussein's ability to exercise political and military control. To this end, it called for attacks on some 238 individual targets in 12 general categories: leadership (central headquarters and organizational establishments); command, control, and communications; strategic air defense; airfields; nuclear, biological, and chemical research and production; Scud missiles and launchers; naval forces and port facilities; military storage and production; Republican Guard Forces in the KTO; railroads and bridges; electrical power; and oil refining and distribution facilities. While all target sets were important, Iraq's communication system and weapons of terror received special attention.

**Destruction of Iraq's integrated air defense system (IADS), known as Kari, was considered key to the effectiveness of the strategic phase of the campaign.** Strikes on this system kept Coalition air losses below acceptable political

and military levels. The traditional approach to meet this end would have been to conduct a roll-back campaign, attacking the system at its edges (individual weapon sites) and penetrating inward only as rapidly as destruction of the outer defenses permitted. However, the Black Hole planners were aware that the Iraqi air defense command and control system was highly centralized and believed that individual weapon sites were incapable of effective autonomous operation. Thus, they elected to go for the throat by attacking the national air defense operations centers (ADOC), sector operations centers (SOC), and subordinate integrated operations centers (IOC). By combining this approach with an aggressive counter-air plan to down Iraq's airborne warning and control system (AWACS) aircraft and to maintain combat air patrols (CAP) over major airfields, Coalition planners counted on owning the skies within the first few days of the war.

**Equally important was the elimination of Saddam's capability to produce and employ weapons of terror: the chemical and biological weapons he was known to possess, the nuclear ones he was trying to develop, and the Scud surface-to-surface missiles he would use to deliver them.** Analysts had concluded that the Iraqi dictator might feel compelled to use these weapons indiscriminately early in the conflict if things were going poorly for him, so weapons of terror received high priority in initial targeting and intelligence collection. Because of Saddam's threats to involve Israel in any fighting, authorities in Washington became concerned that Baghdad could use these weapons to trigger an Israeli retaliation and thereby destroy or weaken the Coalition's common sense of purpose. Another reason these weapons were given high priority is that national authorities were adamant that whatever the outcome of the fighting Saddam would not be left with a credible threat to hold over regional states in the future.

*Phase II* – "Gaining Air Superiority Over Kuwait" was planned as a 2- to 3-day effort to establish a threat-free environment for air activity in the KTO. It would run concurrently with the last few days of Phase I and serve as a transition between the "strategic" air effort aimed at the Iraqi war leaders and the "tactical" air effort aimed at the Iraqi war fighters. This phase was intended to eliminate the individual air defense weapon sites in Kuwait and southern Iraq that could inhibit the precise employment of massed air over the tiny country. Coalition air forces did not want to "have to destroy Kuwait in order to save it." This required that the threat level be reduced to a degree where antiaircraft artillery (AAA) and radar-guided SAMs would not be a significant factor over the battlefield, allowing Coalition air to attack accurately and selectively.

*Phase III* – "Destroy Enemy Ground Forces in Kuwait" was planned as a 4-week effort to shape the battlefield for the initiation of the Coalition's offensive ground campaign to liberate Kuwait. The occupation forces in Kuwait were to be isolated from Iraq, pinned down, and systematically chewed up in their foxholes and fortified positions. Reinforcement and resupply were to be halted entirely, strong points reduced to rubble, breach points for the Coalition ground forces secured from artillery assault, and the opposing army as a whole demoralized, discouraged, and rendered incapable of



effective resistance. High priority was placed on air attacks against Iraqi armor in this phase with the goal being destruction of half of the tanks, armored personnel carriers, and artillery of the occupation forces.

The Republican Guard divisions, which had been withdrawn from Kuwait after Iraq's invasion and deployed around its borders, were targeted in Phase I of the air campaign because they were viewed as instruments for sustaining the Iraqi leadership's power. They continued to be targeted in Phase III as potentially the most effective force Baghdad had near the KTO for counter-offensive operations. They were also targeted for their potential to police the heavily conscript units occupying Kuwait, whose opportunity "to vote with their feet" was hampered by the presence of intensely loyal Republican Guard forces astride the routes home.

Phase IV – "Ground Attack" was planned to begin upon initiation of the ground offensive and continue for the duration of hostilities, with air power supporting the ground commander's scheme of maneuver in accordance with classic AirLand Battle doctrine. The objectives of this final phase – destroy the Republican Guard divisions remaining near the KTO, remove the occupying army, and restore the legitimate government of Kuwait – were traditional principal roles for ground forces. Some within the USAF believed that air power alone could defeat the legions of Saddam Hussein . . . and in effect it did! In the end, the crucial role in the ground war was to convince the world, especially the Arab world, how complete was the defeat of Iraq's army by air power. Pictures on world TV showed Iraqi soldiers surrendering in droves at only the sight of a Coalition soldier or even a Western newsman. In one instance, Iraqis tried to surrender to a remotely piloted vehicle being used as a spotter. Saddam could never claim that his army had remained in the field, bloodied but unbeaten, too formidable for the cowardly Americans to attack.

Although outlined with distinct phases and time lines, the air campaign master plan was actually much less rigid than it appeared to be. National authorities and senior commanders retained a great deal of flexibility to adjust its execution in light of new intelligence, unanticipated requirements, and diplomatic needs. Target sets from Phase I and Phase II were serviced

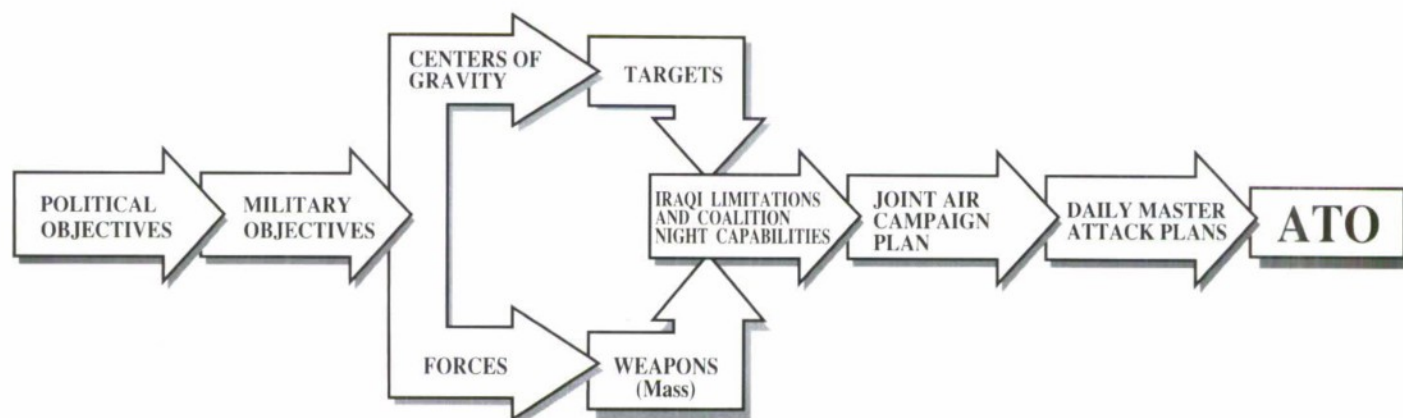
throughout the entire period, denying the Iraqi government a safe haven and chance to regroup. The grouping of targets into target sets enabled Coalition attackers to meet their objectives in spite of encountering the worst regional weather in over a decade. An abundance of assets permitted aircraft to be devoted to emerging high-priority operations such as the "Great Scud Chase" without seriously degrading the overall campaign, although this diversion did impact the air campaign schedule. And the ingenuity and skill of the well-trained Coalition aircrews answered the question "how?" for many of the tasks assigned by the planners. Solutions came in the form of F-111, A-6, and F-15E "tank plinking," F-16 reinvention of the fast forward air controller (FAC) mission, and A-10 visual night operations using infrared (IR) Maverick missile seeker heads to view the battlefield.

## Controlling Air Operations

Another hat worn by Glosson made him responsible for producing the Air Task Order (ATO) used to disseminate mission instructions to all of the Coalition aircraft. A complex document containing hundreds of pages for each 24-hour operating period, the ATO provided the means for "centralized control, decentralized execution" upon which the air plan was based. With hundreds of fixed-wing aircraft and helicopters airborne at any given time (flying through Coalition ground and naval air defense systems and joining with aircraft from different bases to form attack packages), such a master document was absolutely critical to give the air war a coherent focus. Production of the ATO required an enormous staff with representatives from every type of aircraft flown by the Coalition and liaison personnel from all of the Coalition ground and non-flying naval units.

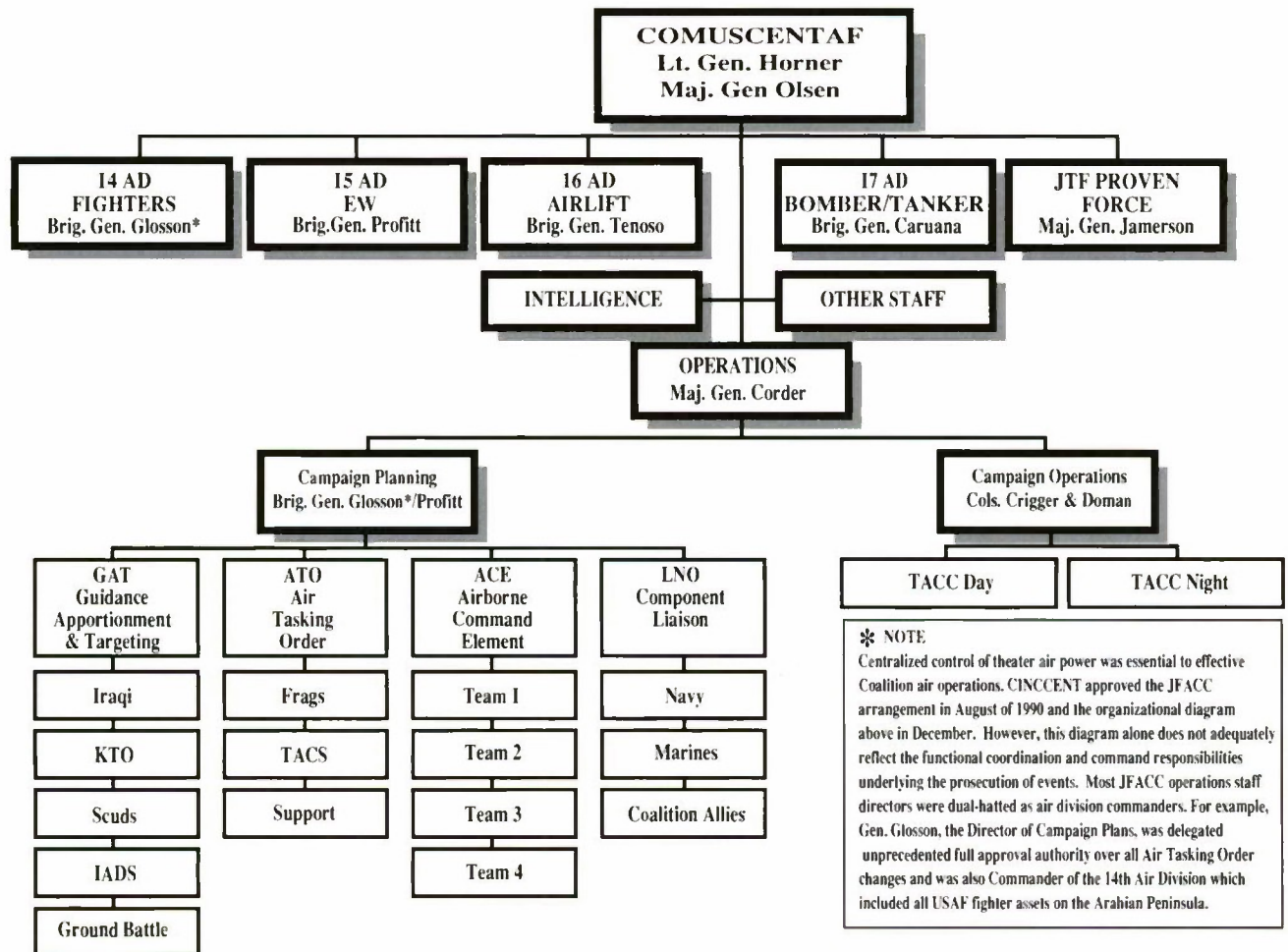
The ATO was generated on a 3-day cycle. On Day 1 of the cycle, planners reviewed intelligence information, battle damage assessment (BDA) reports from previous missions, and requests for attacks from all of the Coalition components.

### Planning Flow Down





## *CENTAF Headquarters*



They then nominated targets and tentatively assigned forces against them. These assignments were considered by Horner in light of his daily guidance from Schwarzkopf and approved or modified. During Day 2 of the cycle, the approved targets were validated, matched with weapons, weapon systems, and units, and attack packages were planned. Air-to-air refueling schedules were developed, ingress and egress routes deconflicted, and all other support requirements organized. The resulting air plan was then promulgated and distributed electronically to air force and ground-based units (via either the antiquated Computer Assisted Force Management System (CAFMS) or by secure telephone modem linking personal computers). Naval forces received the ATO from airborne couriers delivering computer disks. On Day 3 of the cycle, the ATO was executed with airborne and ground-based controllers serving as the traffic police to sort out and direct changes necessitated by weather, aborts, and last-minute decisions on targeting priority.

In actuality, the ATO development process continued around the clock and was an ulcer-inducing experience in

accommodating change. Theoretically the ATO would ensure that the air effort was directed against those targets that had the highest priority at the very moment the attackers were airborne, but in reality, it was only as good as the intelligence and targeting information that flowed into the system. The heavy reliance on overhead (satellite) systems to identify new targets and to determine the effectiveness of attacks on old ones meant that all information funneled through Washington, where it was analyzed, evaluated, and assigned significance by intelligence personnel who, for all of their dedication, were far removed from the battlefield. The time lag this induced and the questionability of the conclusions reached drove CENTAF to rely more and more on aircrew reports and gun camera videotape.

To prepare for the initiation of hostilities while keeping the full scope of the Phase I strategic air campaign secret, the Black Hole developed a highly simplified version of the ATO to cover the first 48 hours of war. This was later expanded to 72 hours. Known as "the Master Attack Plan" and code named Operation Eager Anvil, this plan was constantly revised up to the final days before implementation. Few at

any level in the theater were privy to the complete plan. The success of this mechanism in allowing planners to maintain a coherent picture of air campaign objectives, while ensuring complete surprise at the outbreak of hostilities, was one of the unqualified achievements of the war.

For all its cumbersomeness and in spite of the friction created at the unit level where personnel were unable to see the overall picture unfolding, the ATO served the Coalition leadership – and, ultimately, the soldiers, sailors, airmen, and Marines involved – surprisingly well. Backed by a comprehensive standing set of rules of engagement and amenable to the adoption of innovative workarounds to overcome some of its shortcomings (such as the creation of target "kill boxes" and beyond-visual-range (BVR) missile "free-fire zones"), the ATO allowed the CINC to direct the focus on air operations better than any joint force commander before him, ensuring it remained consistently pointed at his overall goals.

## ***Preparing to Execute***

As Coalition forces grew, Horner's staff expanded and integrated the ongoing unit-level training programs to ensure all participants "trained the way they intend to fight." Building-block exercises of increasingly larger scale brought mixed attack packages from different bases together to train for an air campaign that favored altitudes above 15,000 feet. Since the strategic phase of the campaign had as one of its objectives the destruction of Iraq's air defense system, Black Hole planners believed that Iraqi aircraft and SAMs would lose control of the medium altitudes early on. Coalition attackers then would only have to remain above the range of effective AAA fire and man-portable IR SAMs to keep losses low.

Beginning with hour-long exercises of a dozen aircraft in September, the massed-force training program peaked in November with a week-long exercise named Imminent Thunder. This involved more than 2,000 sorties, a third of them on a single day. Like much of the rest of the exercise program, Imminent Thunder also attempted to deceive Iraqi intelligence. Designed to practice the so-called "D-Day Plan," which had been developed to respond to an Iraqi invasion of Saudi Arabia, it simulated having the bulk of Coalition air sorties attack Iraqi forces on the move into Saudi Arabia and Kuwait along with their supply lines. In combination with highly publicized USMC amphibious assault exercises, this helped misdirect Iraqi attention to the coast of Kuwait and lulled Baghdad into anticipating a more conventional employment of air power.

Another smaller-scale series of exercises, called "Night Camel," contributed directly to the total surprise achieved at the opening of the air offensive. In these nighttime maneuvers, small packages of Coalition aircraft would feint at the Iraqi border, then break off their simulated penetration runs and rejoin for air refueling and return to base. In a very few days, Iraqi air defense controllers became complacent regarding the practice, undoubtedly seeing in it the posturing threat/bluff theme characteristic of their own regime's tactics.

In addition to dulling the alertness of Iraqi defenders, these exercises provided valuable information for the Black Hole. Closely monitored by electronic intelligence (ELINT) resources, they enabled Coalition planners to identify "seams" in the Kari system where radar overlap was weak and information integration poor. These seams were to become the pathways along which Coalition aircraft poured into Iraq in the opening hours of the air campaign.

## ***Ready***

CENTAF had been given surprisingly ample time to build a massive Coalition force, had developed a comprehensive campaign plan to apply it to realistic military objectives, and had trained to execute the plan as a coordinated team. The Coalition was now ready to strike the first blow in the war to liberate Kuwait.

But what of the enemy's aims and perceptions? On the strategic level, Saddam had three distinct objectives: (1) retain Kuwait, (2) avoid humiliation, and (3), if forced from Kuwait, maintain control over the Iraqi army. In his estimate, all of these could be served best by playing a stubborn defensive hand. He believed there were serious fault lines within the Coalition and intended to exploit them to achieve his goals diplomatically rather than militarily.

Basing his estimate of America on the Vietnam War, Saddam did not believe President Bush had the will or authority to launch American forces into a conflict. If Baghdad refrained from initiating hostilities, the Allies would sooner or later begin to quarrel, rendering the Coalition politically ineffective. If he could sit tight long enough, Kuwait could be his by default.

If fighting did start, Saddam believed that he could still achieve his goals through political and diplomatic means. While the Iraqis recognized that in case of war Coalition air forces would soon dominate the skies, they believed that their military, industrial, and political infrastructure could absorb any level of punishment air power could deliver. During this time, their air defenses would inflict high losses on attacking aircraft, soon forcing the Coalition into ground operations. The resulting "Mother of All Battles" would lead to heavy casualties which Saddam believed none of the Coalition powers, especially the Americans, would be willing to sustain. Ultimately, terms would be negotiated, giving Iraq a moral victory if not a military one.

There was one offensive element to Iraqi strategy – the Scuds. Here Saddam hoped to intimidate the Saudis by hitting targets throughout the Arabian Peninsula. More importantly, by firing Scuds at Israel, he calculated that he could force the Israelis into retaliatory action that would shatter the Coalition.

In the end, Saddam's strategy depended on imposing heavy enough losses on the Coalition, both in the air and on the ground, to drive the Allies to the bargaining table and allow Iraq to emerge with its prestige intact. If Baghdad achieved even the semblance of a stalemate, Saddam would reap enormous political dividends throughout the Arab world.



# ***Chronology of Major Events***

## ***Fighting the War***

### **January**

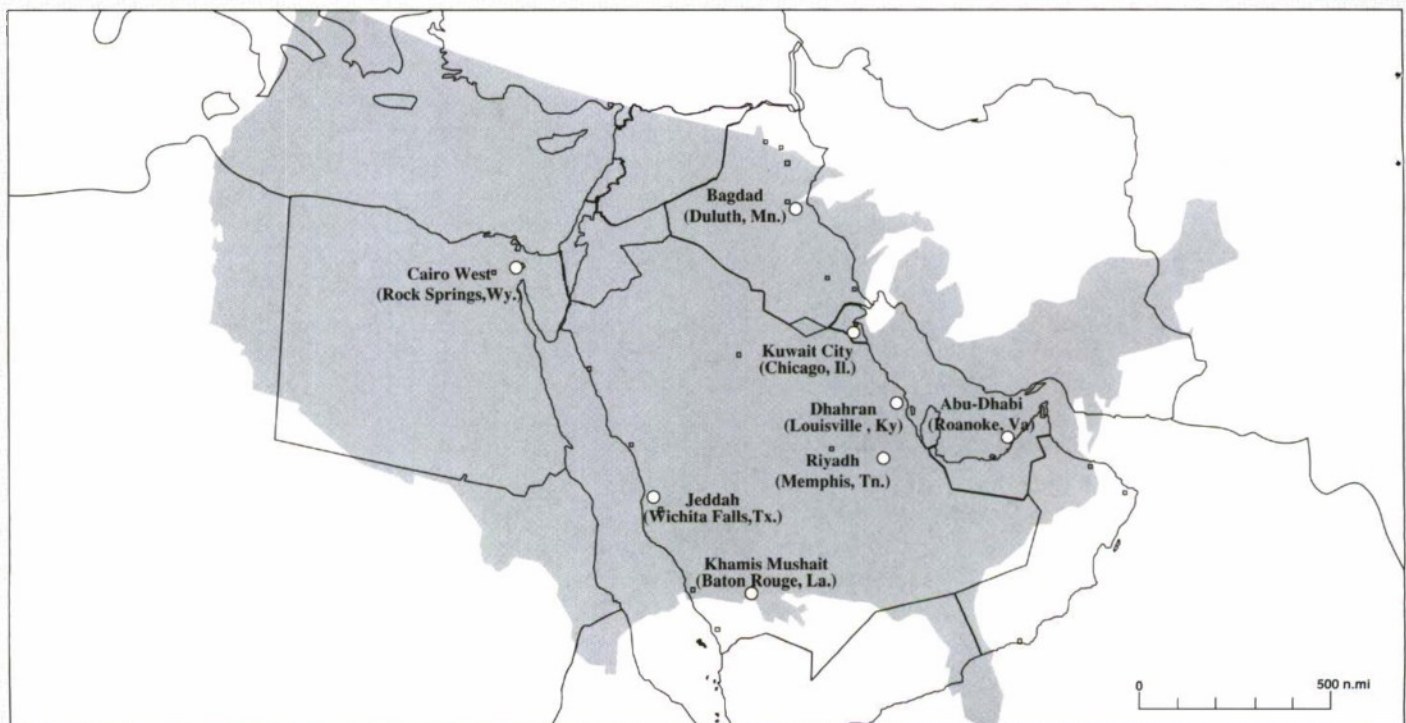
- 16 1535 – B-52s launch from Barksdale AFB, Louisiana  
2400 – In-theater forces begin launching.
- 17 0130 – USN TLAMs launched  
0230 – F-15s on alert to down Adnan I/Baghdad 1 (Iraqi AWACS)  
0239 – SOF helicopters ("Task Force Normandy") strike "seam" radars  
0251 – F-117s strike H3 SOC and Nukhayb IOC  
0300 – H-Hour – F-117s strike Baghdad AT&T and A1 Taqaddum IOC  
0302 – F-117s strike multiple targets in/around Baghdad  
0305 – F-15Es begin attacks on Western Sector Scud sites  
0306 – TLAMs begin impacting Baghdad targets.
- 18 0300 – Iraq launches eight Scuds at Israel; Turkey allows strike from Incirlik ("Proven Force")
- 19 Weather becomes serious factor; "Great Scud Chase" begins
- 20 3-day Master Attack Plan exhausted; normal ATO cycle kicks in

- 21 Airfield shelter-busting begins
- 25 Iraq begins dumping oil into the Gulf
- 26 Iraqi Air Force begins flushing to Iran
- 29 Attack on Khafji

### **February**

- 5 President Bush announces Cheney/Powell visit to Saudi to assess state of war
- 10 Following Cheney/Powell report, President Bush elects to defer ground assault, let air power continue pounding enemy
- 13 Al Firdos C3 bunker strike in Baghdad kills civilians
- 16 Baghdad bombing missions cut back
- 21 Russian "peace initiative;" President Bush gives Baghdad until 23 February to initiate unconditional withdrawal from Kuwait
- 24 0400 – G-hour
- 28 0800 – Ceasefire called in ground war  
2400 – Air operations against Iraq halted.

## ***Mission Distance Comparison With U.S.***







SDS  
International

# What Happened – Execution

## Day One of Desert Storm

On the day before the Operation Eager Anvil attack plan was initiated, Coalition forces displayed no change in the intensity of operations. F-16s substituted for F-15s on CAP missions so that the latter could gain downtime in the hours immediately before war, and Glosson had planned a simulated F-117 crash to distract the Iraqis. The latter was cancelled because the AWACS that was to "report" the crash air-aborted and there was not enough time to get the personnel involved back on station. As it happened, the simulation proved unnecessary. The pattern of activity in the last minutes of peace was sufficiently familiar to mislead Iraqi controllers. They failed to react until the hammer blows had begun falling.

In the last hours before war, the mood among senior American military leaders was one of cautious optimism. Veterans of the misshapen air campaigns against North Vietnam, they felt confident that preparations for combat in the Gulf – at both the tactical and operational levels – were significantly better. At the strategic level, Coalition political leaders had given them clear goals, accepted their plans to achieve those goals, and provided the forces they had requested. Warriors and politicians had never seemed to work in harness better. Nevertheless, these men remembered the confusion, uncertainty, and lack of resolve that had surfaced time and again to interfere with operations in Southeast Asia, and they knew the terrible environment into which they were committing their forces. Baghdad was more heavily defended than Hanoi had been at any time during the Vietnam War and posed a more formidable array of anti-aircraft missiles and guns than any Eastern European city during the Cold War.

## The First Night

H-hour was chosen for 0300 on 17 January 1991, the precise time at which Allied probing had revealed Iraqi defenses to be at their ebb. The initial steps on the road to Desert Storm had been taken the day before at 1535 (Baghdad time), when the first of seven B-52s armed with conventional air-launched cruise missiles lumbered down the runway at Barksdale AFB, Louisiana, and began a 17-hour journey to their launch position in Saudi Arabia. Some 8 hours later, while the venerable "Buffs" were still little more than halfway to the theater, Coalition air forces began to lift off into the

night towards the showdown that Saddam had made necessary. At 0130 on 17 January, the Coalition committed itself to combat with the launch of 52 conventionally armed Tomahawk cruise missiles (tactical land attack missiles or TLAMs) from USN warships ringing the AOR. Unlike manned aircraft, the TLAMs were incapable of being recalled. The air battle had begun in earnest; there was no turning back.

Planners in the Black Hole had anticipated that the first shots to hit the enemy would be those of F-15Cs assigned to down Iraq's AWACS aircraft, Adnan 1 and Baghdad 1, at 0230. Neither aircraft flew that night, so the first blood went to "Task Force Normandy," a force of three Apache helicopters. Guided to their targets by three MH-53 Pave Low helicopters, the Apaches struck two early warning sites in the air defense "seam" on the Iraqi frontier at 0239, 21 minutes before H-hour. This first mission opened a corridor for several packages of aircraft tasked to attack Scud sites, airfields, and chemical weapon storage bunkers in the first few minutes of the war.

### Target Locations





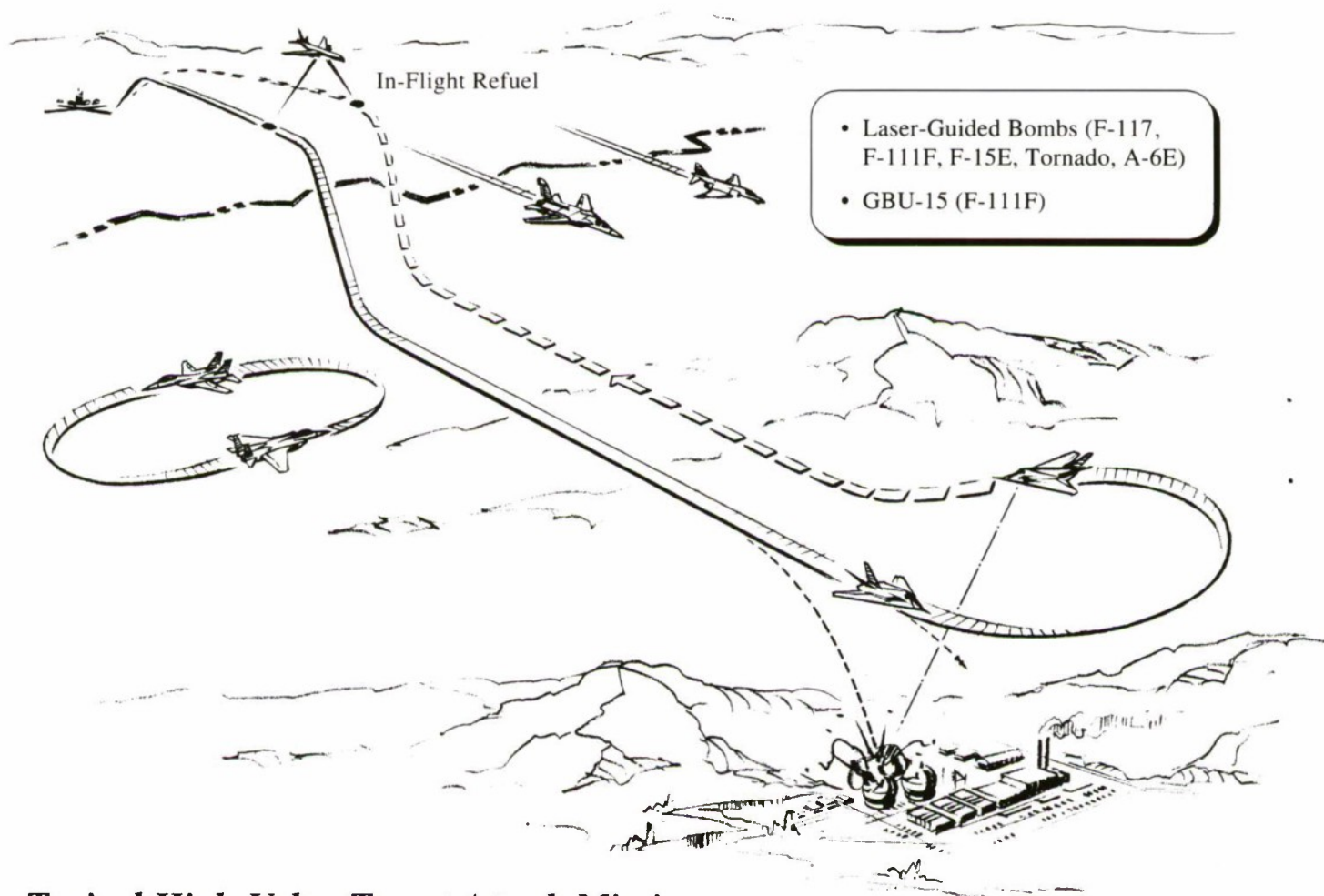
The first F-117 attacks came at H-hour minus 9 minutes and involved further attacks on two key elements in the Kari network's Western Sector: the SOC located at the H3 airfield (which coordinated all sector defenses) and the Nukhayb IOC (which was the central reporting node with the best chance of detecting ingressing forces). At precisely 0300, two F-117s took the war home to Baghdad's leadership by attacking the first targets in the capital: the "AT&T Building," through which all Iraqi international communications were funneled, and the Telecom Center, which handled other communications. In the Black Hole, planners cheered wildly when CNN's live broadcast from Baghdad terminated ungraciously in mid-sentence, providing them the first battle damage assessment of the war.

Within 5 minutes, six more F-117s struck targets in Baghdad: the Iraqi Air Force headquarters (targeted twice), the Air Defense Operations Center, the Presidential Palace, the "AT&T Building" (a second time), the Tallil SOC (controlling defenses in Iraq's Central Sector), and the Salman Pak IOC. Shortly thereafter, the first of the USN's 52 TLAMs, targeted against Baath Party headquarters, the Presidential Palace, the Taji chemical weapons complex, and electrical power production targets, began impacting. Some TLAMs carried special submunition kits that were particularly effective

against transformer stations, creating spectacular short circuits\* and forcing widespread shutdowns in the electric grid. As intended, the loss of these stations forced much of Iraq's military operation, including the crucial command and control centers, to resort to inadequate backup power.

While Baghdad was ringing to the sound of the F-117 and TLAM attacks, F-15E fighter-bombers equipped with LANTIRN (low altitude navigation and targeting infrared for night) navigation pods and supported by EF-111 radar jamming aircraft penetrated through the first rips in the radar seam to attack fixed and known mobile Scud launching sites in western Iraq. As they withdrew, F-15C and F-14 fighters moved in on CAP sweeps against the airfields known to hold potentially heavy air-to-air threats. The assumption was that striking hard and fast would deter the enemy from even launching.

The assumption was a good one. One MiG-29 was shot down by his wingman, who then flew into the ground – hardly an auspicious beginning. In other encounters, Iraqi MiG-29s and Mirage F-1s flew head on into USAF and USN radar-guided and heat-seeking missiles with no apparent evasive maneuvering. When one low-flying Iraqi F-1 exploded, victim of an F-15C missile, his wingman rolled inverted and pulled into the ground . . . the second ground kill of the early



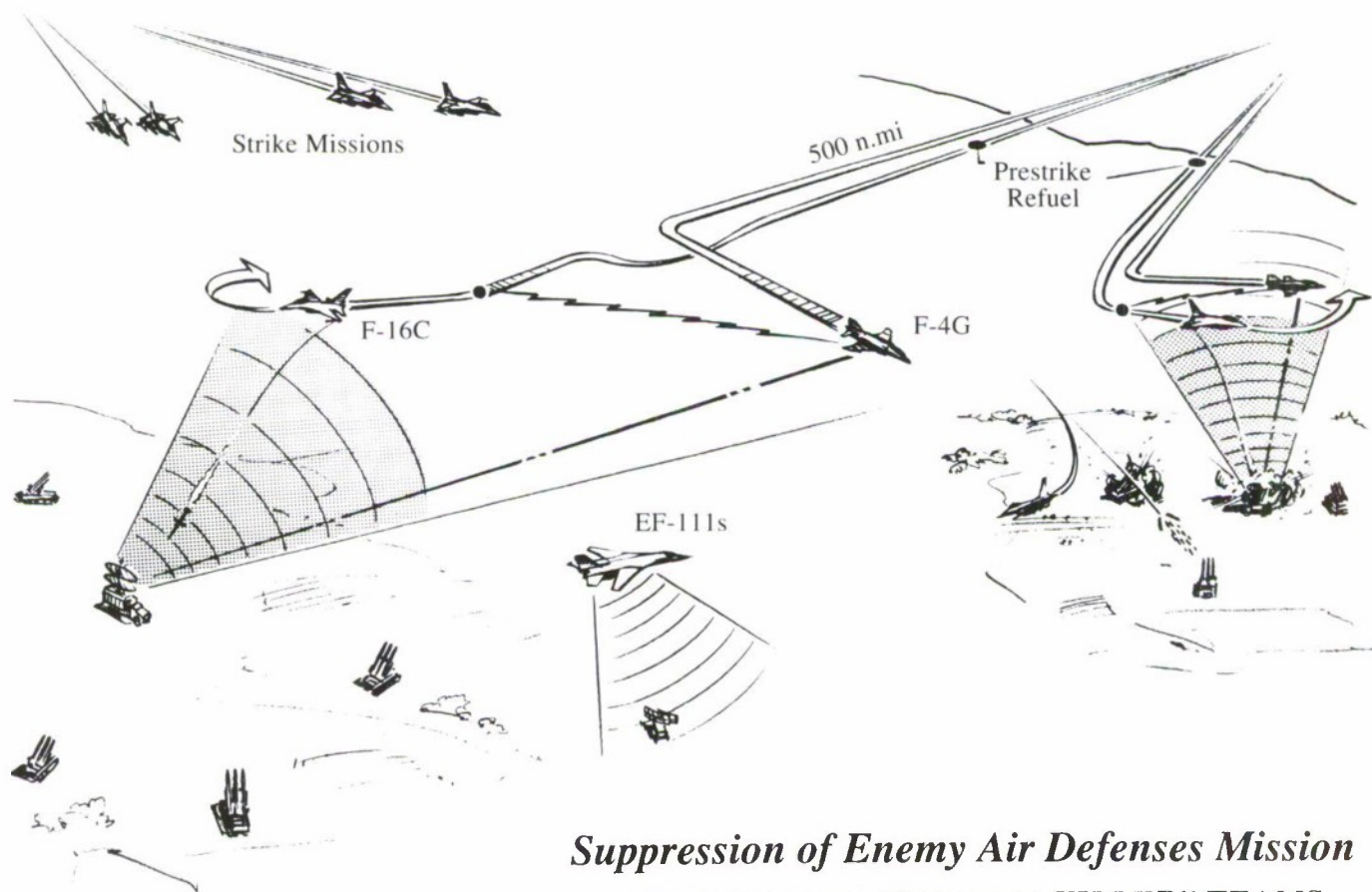
***Typical High-Value Target Attack Mission***

morning. The sole Allied loss to enemy air action during the entire war came during the first night when an F/A-18 from the USS Saratoga was downed reportedly by AAA or an air-to-air missile, killing the Navy pilot. There were no engagements worthy of the name, and the first day's air-to-air kill tally totaled only eight, largely because the Iraqi Air Force pulled its head in and turned turtle. The Iraqis were encouraged in this by Tornado GR-1s, F-16s, B-52s, A-6Es, F/A-18s, and others dispensing conventional explosives against runways and taxiways and dropping antipersonnel mines to disrupt cleanup and repair activity.

Shortly after the first Baghdad attacks, the Coalition unleashed the full weight of its SEAD (suppression of enemy air defense) capability against Iraq. The Black Hole planners believed that the F-117 and TLAM attacks would have prodded the still-functioning components of the Kari system into full alert, ready to engage all attackers. They also believed that the September 1990 remarks of former USAF Commander General Michael Dugan about striking at the foe's heart (remarks that resulted in his abrupt dismissal) would lead the Iraqis to expect an all-out blow on downtown Baghdad. And, true to the defenders' expectations, their now fully activated early warning radars showed Coalition aircraft massing south of the border for just such a raid.

Actually, what Saddam's air defenders believed to be waves of attack aircraft were large SEAD packages moving toward Baghdad from the west and the south, eager to find the unwitting radar operators. With F-14s and F-15s as top cover, EA-6B and EF-111 jammers began scrambling enemy radar scopes, forcing the defenders to transmit at full power in an effort to "burn through" the clutter. While EC-130 "Compass Call" aircraft disrupted enemy communication links and contributed to the anti-radar jamming, BQM-74 drones and USN Tactical Air Launched Decoys (TALD) entered the high-danger areas, dropping chaff and simulating an indeterminate number of "probable attackers." Confronted with this massive threat, Iraqi radar operators ceased "blinking" (switching their radars on and off to prevent acquisition by anti-radiation missiles) and began full-power radiation, frantically trying to isolate targets for their SAMs. At this point, USAF F-4G Wild Weasels and USN A-7s and F/A-18s proceeded to launch a total of 67 HARMs. Subsequent correlation of data regarding HARM firings and the cessation of radar activity from attacked sites suggests that some 45 percent of the missiles proved lethal.

Concurrent with this two-pronged thrust at Baghdad, other SEAD packages attacked the defenses near Scud bases in the west and around Basra and Kuwait City in the east. These



### ***Suppression of Enemy Air Defenses Mission***

**• WILD WEASEL "HUNTER-KILLER" TEAMS**



attacks achieved similar levels of success against the Iraqi defense system. The crucial point is that the Weasels and the Navy SEAD attacks intimidated Iraqi air defenses and operators beyond the mere destruction of individual SAM sites. The commander of the F-4G forces later remarked:

"We beat them down early, quickly, efficiently. The enemy knew that if he turned his radar on he'd be dead. As a result, the Iraqis stopped using their radars. If anything, they would "blink" them just to get some cuts on attackers that might be coming in . . . and to be able to tell their commanders they were doing something useful. They're firing their missiles off ballistically now and are almost completely ineffective."

Throughout the remainder of that short first night, Coalition forces continued their attacks across the breadth of the theater – returning to command and control centers, leadership targets, airfields, Scud sites, and chemical weapon storage bunkers. While there is no detailed picture to date of what was happening within Iraq, there was clearly considerable confusion and misinformation. Undoubtedly, the Iraqis found it difficult to grasp exactly what had happened over the past several hours. To add to their confusion, a second F-117 attack had come immediately on the heels of what had seemed to be a massive attack against Baghdad – the SEAD package – and, with no apparent aircraft overhead, bombs had once again fallen on Kari control centers.

In almost every respect, the first night's work represented an enormous success. The crucial piece of evidence was the fact that Coalition air forces had lost only a single airplane. Considering that the Coalition's leaders had expected far heavier losses (estimates had ranged from 20 to 25 aircraft), the loss of a single aircraft, while painful, appeared miraculously low. The apparent results also met highest expectations, all the sweeter in comparison with the experiences of previous wars. The damage to the enemy's systems had been significant. Intelligence sources reported that much of Baghdad no longer had electricity. Kari no longer operated as an integrated system. Many Iraqi radars and SAM sites no longer functioned. All but one of the SOCs targeted were confirmed to have been hit, and that one no longer functioned. Laser-guided bombs had hit many IOCs and, even if those sites still operated, their effectiveness no longer reflected their purchase price.

## ***The First Day***

**D**awn brought no relief to the Iraqis. The savage pounding that had begun in the dark continued throughout the day as it was to continue day in and day out until the war's end. The B-52s, which had been the first Coalition forces to head to war but had only reached Libya at H-hour, arrived at their launch positions in Saudi Arabia between 0830 and 1200 and fired 35 CALCMs at power production and communications targets throughout Iraq. One missile crashed shortly after launch, but at least 28 were confirmed to hit their targets and three others may have impacted in the target area. The attack

by CALCMs on the Al Musayyib Thermal Power Plant proved the accuracy of the weapons systems and also provided a preview of what was to become a persistent problem – obtaining timely and accurate BDA.

Throughout the day, Coalition aircraft moved widely within the theater, striking assorted targets in both Iraq and Kuwait. The weight of the attack continued to fall most heavily on the enemy's air defenses. Large SEAD packages persisted in hammering at Kari control centers and individual SAM sites, while a variety of attacks repeatedly hit primary and dispersal airfields. A-10s attacked the enemy's early warning radars along the frontier to blind Baghdad to continuing penetrations. Scud and chemical weapon production facilities and storage bunkers, including those in the far northern and western sectors, received more attention as did petroleum stocks and facilities. Bridges leading into the KTO, transshipment yards, and Iraqi ground forces in the tri-border area were hit. F-16s struck the Republican Guards several times during the day (the first of many visits) and mounted a particularly heavy mass attack west of Baghdad against both the airfield at Al Taqaddum and the nearby Habbaniyah petroleum storage facility.

Meanwhile, TLAMs continued hitting targets in the Baghdad area. The air campaign planners intended to keep pressure on the capital 24 hours a day. Since the F-117s could fly safely only at night, TLAMs and other standoff weapons offered the best daylight weapons. This brought no small amount of pleasure to the non-flying forces of the USN. The commander of the guided missile cruiser USS Normandy sent the following message to Vice Admiral Stanley Arthur, commander of CENTCOM's naval component (NAVCENT) on the morning of 17 January: "Had a chance to reach out and touch someone today – and liked it!" Undoubtedly, the significance of six TLAMs hitting the Iraqi Ministry of Defense between 1010 and 1017 did little to improve morale of those in the building or in the neighborhood. The close groupings of TLAMs on particular targets must have added to the Iraqi sense of helplessness. Although the missiles could often be seen in flight, little could be done in response.

The first day's effort ended with heavy attacks in the early evening. B-52s pounded the Tawakalna Division of the Republican Guards, while F-111s, supported by EF-111s, attacked Saddam Hussein's residence in his home town of Tikrit, north of Baghdad. On the evening of 18/19 January, the main show centered on F-117 attacks against still more Baghdad targets (leadership, communications, air defense nodes, chemical and nuclear facilities, and electricity production) and on USN/USMC attacks against the air defenses in eastern and western Iraq. Due to weather, the last F-117 attack of Day 1 barely achieved a 50 percent hit rate (10 hits and eight misses), and a number of other weapons were not released for lack of assured target identification. This disappointment presaged the weather problems that were to hamper the air campaign intermittently during the remainder of the war. Bad weather particularly incapacitated the F-117s, which lacked radar and were wholly dependent on their passive IR sensor systems to locate and attack targets. The USN and USMC attacks against targets near Basra, augmented



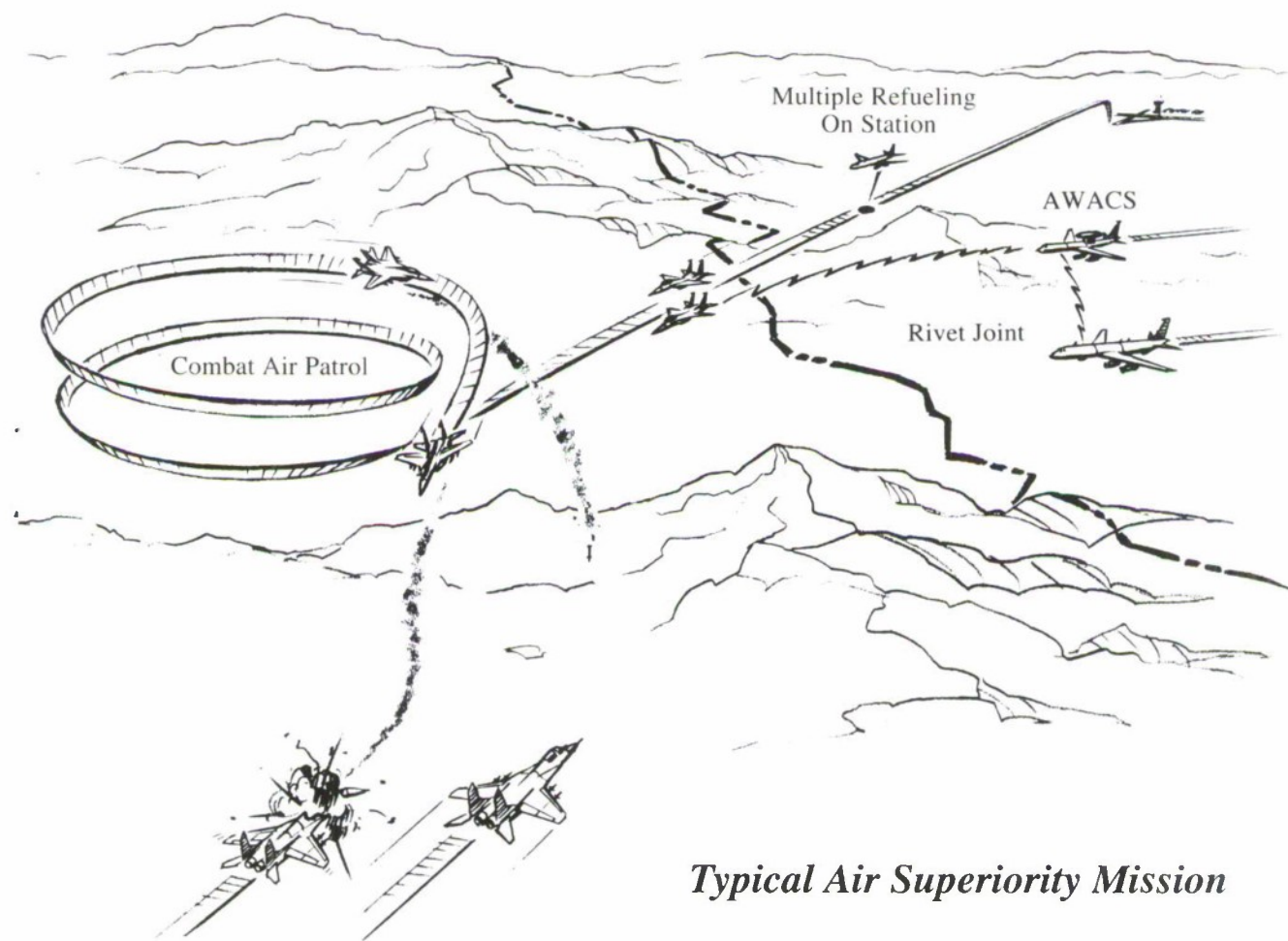
by F-15E and RAF GR-1 assets, were more successful, as were USN A-6E and RAF GR-1 attacks against the airfields at H-2 and H-3.

By the end of the first 24 hours, the Iraqi air defense system had received a severe body blow. It is impossible to estimate at what point it no longer operated as an integrated system; the Iraqis themselves still probably do not know. Some areas of the system, particularly around Baghdad, were capable of autonomous operation, but the sectors were under severe pressure and no longer presented an effective belt of defenses. Coalition planning and execution had created maximum confusion and friction within the enemy's system. The first three phases of the air campaign plan had been initiated simultaneously and could now be pursued individually and collectively as circumstances dictated and opportunities afforded.

Coalition losses were still surprisingly low. Five Allied fighters went down in the first 24 hours: two to AAA, two to radar-guided SAMs, and one to either Iraqi ground or air action. The only daylight loss was a valiant Kuwaiti A-4 pilot, who was downed over his homeland as he pressed an attack with excessive passion. Perhaps the second greatest surprise of Day 1 was the failure of the Iraqi fighters to put up any

significant opposition. The enemy flew 120 sorties on the first day, but many were not "shooter" sorties. In fact, during the first 3 days of the air war, the Iraqis flew only slightly more than 100 air-to-air sorties, a dismal performance in view of their numbers. Many suspected that the Iraqi leaders never intended to commit their aircraft to meet the first waves of air attacks, planning instead to save the air force for support of the army in the ground battle. Whatever the reason, the lack of response was indeed a surprise.

The first day's success established a number of essential preconditions for the destruction of Iraq's military power at minimum cost to Coalition forces. First, it was clear that Coalition air would soon enjoy absolute air superiority throughout the theater, enabling Coalition to redeploy and reposition land and air forces at their convenience while the Iraqis remained blind. Second, Coalition air would be able to pound the Iraqi ground forces without serious impediment, making it practical to forestall the ground campaign until air attacks either ceased generating enemy attrition or opposing forces were assessed as no longer capable of mounting effective resistance. Finally, there would be sufficient time and assets to devote to strategic targets, the destruction of which would lessen Iraq's threat to regional stability.



*Typical Air Superiority Mission*



Nevertheless, Horner was forced to interject a note of sobering realism to the general euphoria sweeping his 17 January staff meeting by warning: "We are at Day 1 of a 30-to-40 day war."

## ***Day Two of Desert Storm***

As with the first day, the Black Hole had carefully scripted what would occur on Day 2 of Eager Anvil's execution. The pattern of Coalition air operations again reflected Horner's determination to focus first on spreading confusion and friction throughout the enemy's command system and on negating his air defenses. To a great extent, operations on Day 2 extended the successes of the previous 24 hours. But, by the end of the day, the adverse impact of weather loomed large. Also on this day, Saddam initiated one of the only two offensive actions he was to undertake during the entire conflict. Around 0300, he launched eight Scuds at Israel (his response to the Coalition's H-hour 24 hours earlier?) and sparked off "the Great Scud Chase" that was to plague the air commanders throughout the rest of the war.

The second day began with F-117 attacks as on Day 1. The planners continued to pay special attention to Kari SOCs and IOCs, maintaining the emphasis on disruption rather than sheer physical destruction. Attacks were retargeted against the chemical and biological weapon bunkers and facilities that had escaped damage due to the bad weather the previous night, and the F-117s responded by achieving hits with 13 of 19 bombs, a considerable improvement over their success rate of the previous night.

An additional strategic factor to the Coalition's advantage opened on 18 January when the Government of Turkey allowed USAF European-based aircraft to launch from Incirlik Air Base for attacks on northern Iraq. This operation was code named "Proven Force." These aircraft confronted the Iraqi leaders with a threat from a second front, further overloading their struggling air defenses and placing enemy airfields in the Northern Sector within easy range of U.S. attackers. This additional threat prevented the Iraqis from shifting air assets northward to escape Coalition air attacks. The first attack from the north came at 0410 on 18 January, when 10 F-111s attacked five radar sites. Although not equipped with laser designating systems, the Proven Force aircraft put the Iraqis on notice that there were now no sanctuaries.

Along with the F-117 and Proven Force attacks in the early morning hours, other packages struck airfields and Scud sites throughout Iraq. The major Iraqi air bases at Ballad, Al Taqaddum, and Jalibah were all heavily attacked by F-111s and GR-1s. If the Iraqis aimed to display more willingness to engage Coalition aircraft in the air, these attacks were meant to discourage them.

The structure of attack packages for Day 2 were somewhat changed from those of Day 1. Believing that the first day's effort had severely degraded Iraqi defenses, the planners put larger packages in against the various target sets. The first daylight attack, involving a large USN package supplemented by RAF GR-1s, was targeted against the airfield and related

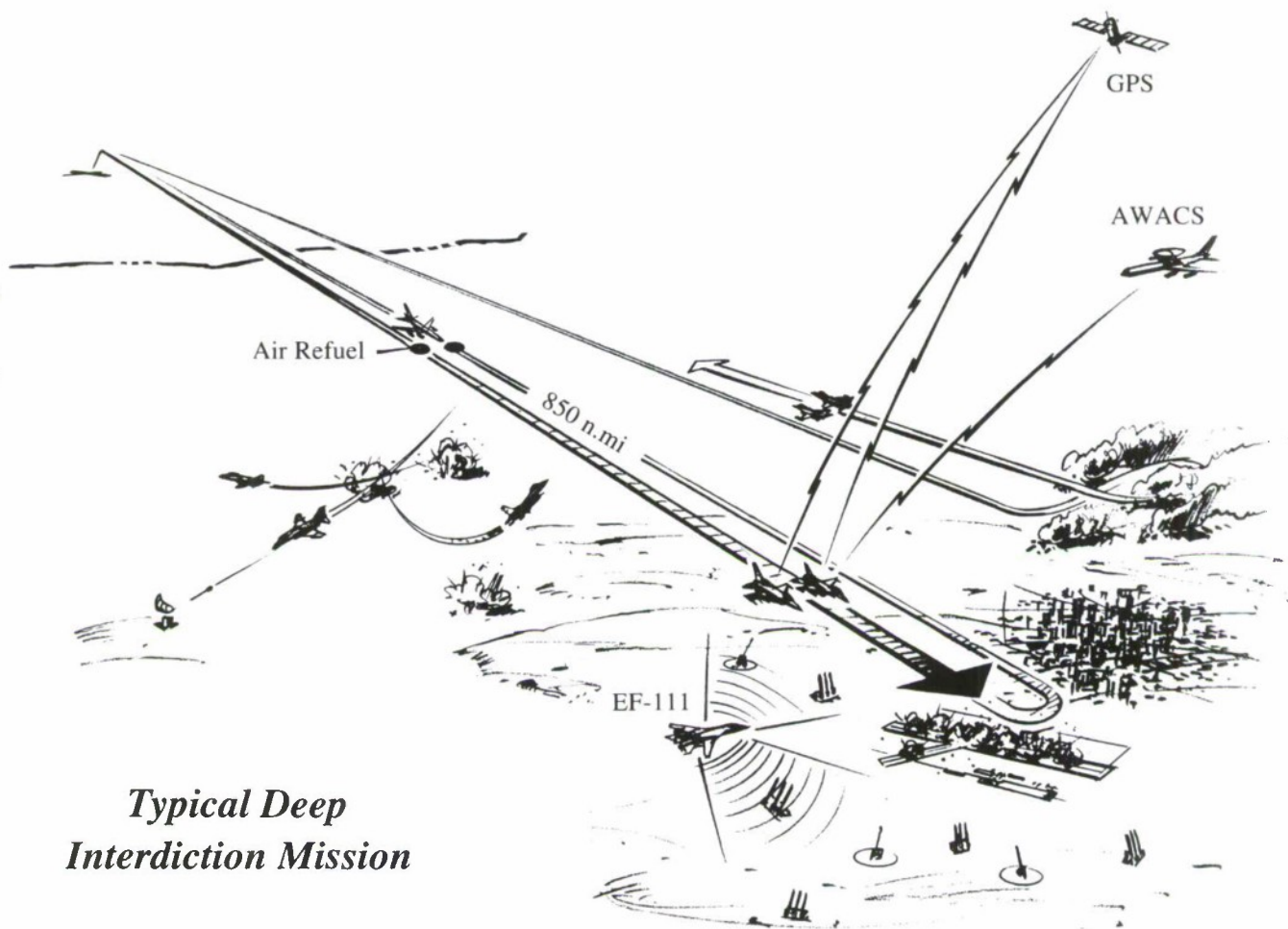
facilities at Al Asad, but bad weather interfered with much of the mission. Shortly thereafter, two large packages struck near Baghdad. In the first, 40 F-16s attacked the Habbaniyah artillery production facility, the airfield and chemical warfare bunkers at Al Taqaddum, and the Al Ishkandariyah armament plant, all on Baghdad's west side. This was followed immediately by an attack of 44 F-16s against the Scud-related manufacturing and propellant production facilities at Latifiyah, southeast of Baghdad. Large SEAD support contingents covered both packages to suppress the remaining, but still potent Baghdad defenses.

It is worth noting at this point that throughout the war F-16s served as the Coalition's workhorse, the principal asset available for multirole tasking, including day-and-night mass attacks against area targets with multiple aim points. Low radar cross section and small size made individual aircraft difficult to acquire, and the large quantities available (the F-16 had replaced the venerable F-4 as the backbone of the USAF's fighter force) enabled planners to assemble major packages in which most of the participants enjoyed similar optimum cruise speeds, responsiveness, and other operational qualities that simplified mass maneuvering. While one cannot quantify the full impact and effectiveness of these attacks against the Iraqi support structure, the versatility, numbers, and performance of the F-16s enabled air planners to focus them wherever necessary to maintain relentless pressure on the Iraqi military capability. Iraqi defenses showed no credible ability to damage these massed attacking formations when missions were executed properly, and the weight of such attacks undoubtedly had a significant impact on enemy capability and resolve, particularly those of the ground forces.

At 0930 of the second day, air attacks began to pound the Republican Guard units located along the Kuwaiti-Iraqi border. The USMC led off with 24 F/A-18 sorties divided equally among the Tawakalna, Madinah, and Hammurabi Divisions. Mixed USAF and USMC fighters and SEAD assets supported the attack. Two hours after the last F/A-18 mission, 30 F-16s struck the Tawakalna Division alone. At 1610, 16 F-16s hit the airfield at Al Rumaylah just north of the border. While the fighters gave the airfield a working over, 30 more F-16s again struck the Tawakalna Division, followed 15 minutes later by 24 F-16s hitting the Madinah Division. On these strikes as on other early packages, SEAD assets covered the attackers. On this occasion, there were four F-4G Wild Weasels and two USMC EA-6Bs, reflecting the Coalition's ability to mix the forces of different services and different nations to achieve maximum effectiveness.

Two other features of the second day were the constant hammering of Iraqi positions near the border by A-10s and the sustained attacks by USN-led packages against enemy naval and air force positions in the Basra area. The former made clear to the Iraqis the dangers involved in unleashing a ground campaign; the latter removed the latent threat of Iraqi naval forces at the top of the Persian Gulf. The attacks on naval targets were a major focus of USN air operations in the first weeks of the war. In total, over 1,000 attacks of naval fixed-wing aircraft were directed against the Iraqi Navy, its bases, and other sites that could threaten Coalition operations afloat.





### ***Typical Deep Interdiction Mission***

The destruction of Iraq's naval assets soon allowed the Arabian Gulf Carrier Battle Group to move into the central portions of the Gulf, thus relieving some of the heavy strain on tanker support requirements.

The evening and night of 17/18 January proved disappointing for the F-117s. The weather was so bad around Baghdad that no F-117 could drop on its primary target, and only a few alternates were open. In spite of generally deteriorating weather conditions throughout the AOR, attacks by other aircraft did go on. A package from the Red Sea Carrier Battle Group struck the power plant and TV station at Hadithek in western Iraq. Three B-52s again hit the beleaguered Tawakalna Division in the late evening, while two four-ship formations of B-52s struck targets near Tallil. The final action of the day saw eight F-111s hit bridges along the Euphrates behind the Republican Guards, while more B-52s dropped on the Tawakalna, Madinah, and Hammurabi Divisions.

The second day's air action underlined the continuing success of efforts to degrade Kari and suppress individual elements of the Iraqi air defense system with SEAD packages. Iraqi air activity declined by about one-third compared with the first day. While Coalition fighters failed to down any Iraqi aircraft, Coalition losses fell to only three aircraft: a USN EA-6B, a USMC OV-10, and an Italian GR-1. Due to weather, Coalition air forces had flown 200 fewer sorties than on Day 1, but, all in all, it had been a successful day.

## ***Interim Assessment***

From Saddam's perspective, which was heavily influenced by the information he was receiving, the situation must not have looked so dark. His propaganda machine claimed numerous downed Coalition aircraft. While he may not have believed all the claims, he undoubtedly gave some credence to the inflated reports from his air defense commanders. Moreover, given the confusion throughout the country and among the high command, it is doubtful that the Iraqis could accurately assess the damage to Kari. The only assured communication system remaining was one that relied on messengers and dispatch riders. Finally, with much of the air force protected in hardened shelters, Saddam still believed that he could preserve considerable air assets for the beginning of the ground battle. Meanwhile, Iraq and its military forces could bear whatever damage Coalition air forces could inflict until the "Mother of All Battles" began.

There were a number of ironies in the Iraqi assessment of the military situation. From the Coalition perspective, events would soon bear out Horner's pessimism (and Saddam's optimism) that things never go flawlessly in war. Extraordinarily bad weather, the diversion of many assets to "the Great Scud Chase," and other uncertainties soon combined to place a great strain on the conduct of the



"strategic" air campaign. But the perseverance of the Coalition commanders, the resolve of their political leadership, and the skill of the men and women upon whose shoulders the conduct of the battle rested were to write a different ending to the story than the one foreseen by the tyrant in Baghdad.

## ***Day Three of Desert Storm***

The Master Attack Plan called for the "strategic" campaign to continue during Day 3 through Day 6 with reattacks on 20 percent of the targets from Day 1 and Day 2 plus attacks on other key targets identified by late-breaking intelligence. Bad weather had already severely affected the first F-117 attacks on the night of 18/19 January, and those initial difficulties were a harbinger of what was to come. In terms of effectiveness, the third day was the worst in the campaign for the F-117s. Of the 24 LGBs dropped by F-117s on 19 January, all were on alternate targets and only four were counted as hits. More significantly, 22 weapons were "no drops" because of the weather. Consequently, the F-117s made very little contribution to the strategic campaign that night. Despite the deteriorating conditions on 19 January, a number of attacks did go in against targets – either through breaks in the clouds or by radar drops. But throughout the day, weather canceled force packages and affected the tactics and accuracy of those who did bomb.

The third day kicked off with F-15Es striking Scud and air defense targets. The next large package, F-16s targeted against the Madinah and Hammurabi Republican Guard Divisions, was canceled because of weather. At 0500, another package was to attack Tikrit South and the Scud depot at Qubaysah, but air and ground aborts again washed out much of the mission. At the same time, on the other side of Iraq, the USN was having no better luck, having been forced to cancel attacks against the naval base at Umm Qasr. The major successes of the morning came between 0600 and 0730. At 0600, four B-52s pounded the Madinah Division with a wake-up call, and half an hour later 30 F-16s delivered the same message to the Hammurabi and Tawakalna Divisions.



On a less satisfying note, difficulties awaited large attack packages the planners had scheduled to hit Baghdad from 0700 to 0730. This problem foretold others to come in adjusting the ATO process from the pre-planned 3 days of the Master Attack Plan to the situation-dependent ongoing war. The planned attack was to involve 104 F-16 attackers, backed by a total of 42 EF-111s, F-4Gs, and F-15Cs. These targets were the Al Taqaddum air base and the Habbaniyah chemical weapon production complex (both west of Baghdad); the nuclear research facility (south of Baghdad); and, in downtown Baghdad, the headquarters compounds of the Internal Security Agency, Military Intelligence, the Baath Party, Ministry of Information, and the Iraqi Air Force. In putting so many aircraft together, planners hoped to minimize the coordination of SEAD and tankers, keep sortie utilization rates up, and deliver a psychological blow to the enemy by taking out large area targets that could be severely damaged only with saturation coverage. However, virtually none of these sorties proved effective due to a combination of weather, tanker support, late changes in the ATO, resultant force coordination problems, and politically motivated retargeting.

The day before the big attack, package commanders had gone to bed with well-developed and fully coordinated plans for mass attacks as called for in the Master Attack Plan. They woke in the early morning hours to discover their targets had been changed. The mission scheduled to attack downtown Baghdad targets had been shifted to Scud sites around H-3 airfield, the first "scheduling casualty" of Saddam's Scud launches against Israel the preceding day. The mission scheduled for the nuclear research facility was retargeted against the major sites in downtown Baghdad.

Between the arrival of the ATO and scheduled launches, there was not enough time for those scheduled to attack Baghdad to coordinate the changes fully among key players at the several bases involved or to change the order of the attack. Unthinkingly, the plan called for the attackers to begin on the outskirts of Baghdad and progressively work their way into the heart of what would be a fully alerted – albeit battered – defense zone. Weather and timing problems on the tanker tracks left the downtown attackers and their SEAD support short of fuel and unsynchronized. Cloud cover obscured the primary targets, and, as the attackers pulled off their aborted runs and prepared to shift to alternate targets, the "Wild Weasels" announced their departure because of low fuel. The remaining elements of the Kari immediately came up to full power and launched salvos of SAMs, two of which ultimately claimed Coalition victims. Approximately half of the attackers succeeded in hitting an oil refinery, the alternate target, but several were forced to jettison their ordnance and engage in last-ditch maneuvers to avoid enemy missiles. The participants in the wild ride over the capital counted 20 SAMs in the air at one time, and one F-16 pilot dodged no fewer than six, blessing his aircraft's agility on each occasion.

As a result of this frustrating experience, no more huge attack packages were to be launched against the capital. Faced with more bad weather forecast through the near term and given the time-lag difficulties inherent in shifting to the non-prescribed ATO, Horner and his staff were unwilling to place



Coalition aircrews at what they considered to be unacceptable risk. For the time being, the Coalition air leaders were prepared to leave what remained of downtown Baghdad's "leadership" targets to TLAMs during the day and the F-117 stealth fighters during darkness. By the time both weather and the ATO process improved to the point where mass attacks were feasible, Coalition leaders were focusing on the impending ground war and judged them unnecessary. What speaks well for Coalition leadership in this incident was the fact that it did not repeat the abortive mass attack to prove some doctrinal belief of the high command at the expense of valuable aircrews and aircraft; they adapted to the situation as it was.

• Meanwhile, heavy attacks on the Republican Guards (involving F-16s, B-52s, F-111s, and USMC F/A-18s) continued effectively all day and into the evening. The attention focused on Saddam's "elite" force reflected Schwarzkopf's priorities rather than those of his ground commanders, who were more concerned with the Iraqi forces directly across from their battle lines. The air planners and commanders (and the policy makers in Washington) viewed the elite Republican Guard units as political and strategic targets as well as military ones. Nevertheless, the JFACC system continued to focus air assets on the overall objectives previously established. As Schwarzkopf remarked on one occasion: "If it isn't in the ATO, it doesn't fly."

Other target sets serviced throughout the day included Scud production and propellant manufacturing plants, oil refineries, military manufacturing facilities, bridges, chemical weapon and ammunition storage areas, air defense sites, and communications links. RAF and Saudi GR-1s continued to pressure Iraqi airfields throughout the day, while French and British Jaguars and Kuwaiti A-4s struck Iraqi forces in and around Kuwait City. Coalition air forces continued their domination of the skies over Iraq, with F-15Cs downing six more Iraqi fighters.

On the other side of the coin, 19 January proved to be the worst day of the conflict for Coalition air losses. GR-1 Tornados suffered in particular, with the British and Saudis each losing two. Besides the two F-16s lost to SAMs over Baghdad, CENTAF lost an F-15E to a SAM and an F-4G to fuel problems. Given the number of sorties flown, however, these losses were well below pre-war expectations and were more than sustainable.

## ***The Beginning of the End***

By the end of Day 3, the war with Iraq had effectively been won. However, still lying ahead were painful losses, aggravating frustrations, and air campaign shifts in emphasis. Neither side knew it for sure, nor would they believe it until Coalition forces jubilantly entered Kuwait City some 40 days later, but the pattern for victory had been firmly stamped in the sand within the first 72 hours. At this point, it was clear that success in Phases I and II of the Air Campaign Plan was well within the grasp of Coalition forces. By 23 January, kinks in the ATO production process had been worked out (as well as they ever would be over the period of operations) and

its daily assembly refined to a degree with which both planners and operators could live. By early February, the air planners had developed workarounds for the lack of timely, accurate intelligence from national sources and were systematically chewing up the enemy forces trapped and isolated in the KTO by the most successful air interdiction campaign ever conducted. By mid-February, Coalition Navy and Marine commanders had accepted the fact that they were not going to be permitted to conduct an amphibious assault against the enemy's formidable coastal defenses and had committed the remainder of their "self-defense" air resources to the centrally orchestrated campaign to prepare the entire battlefield for the coming ground campaign. By 24 February, when the 100-hour ground war began, the intricate, deadly ballet of elephants known as the AirLand Battle had been refined and rehearsed sufficiently to allow its key players, the Coalition's air and ground warriors, to complete the liberation of Kuwait with losses considered minuscule by even the most optimistic prognosticator.

With the above events in mind, the remainder of this paper will focus on only the more significant events that occurred during the rest of the air campaign leading to the swift and successful liberation of Kuwait.

## ***The Great Scud Chase***

Of all the aspects in the air campaign, the effectiveness of air operations in suppressing Iraq's Scud missiles remains the most unclear. In terms of its indirect effects, the Scud was the most effective weapon in the Iraqi inventory because it siphoned off large numbers of Coalition air sorties that could have found more productive utilization in other areas. The Coalition possessed an excess of air power over its minimum requirements, and it is difficult to determine exactly how or where those sorties might have been used better; but the fact remains that during the 43 days of battle, the Coalition flew almost 2,500 sorties against Scud targets (i.e., fixed sites, manufacturing facilities, storage bunkers, propellant plants, and the elusive mobile launchers). The "Great Scud Chase" absorbed no less than 25 percent of all F-15E sorties, 8 percent of all F-111 sorties, 7 percent of all A-10 sorties, and 6 percent of all F-16 sorties. At one time or another, it involved almost every kind of asset available to the air arm.

The Scuds represented an area of divergence between Washington and operational commanders in the Gulf. While most senior military commanders did not regard conventional Scuds as a particularly credible military threat, the flexibility associated with different types of warheads made them a political threat that had to be taken seriously. Early intelligence indicated that the Iraqis possessed approximately 36 mobile launchers. By December 1990, overhead imagery revealed these all had been dispersed to unknown locations. The air campaign strategy targeted the fixed sites (all of which were known) in the opening days of the war, devoted a significant number of early sorties to attacks on missile and propellant manufacturing and storage centers, and launched a large number of additional sorties to those areas where the



Iraqis would likely deploy their mobile launchers ("firing baskets"). However, finding and destroying the individual mobile transporters and launchers was to require inordinate effort and some fine-tuning of coordinated armed reconnaissance procedures and tactics.

The Iraqis initiated their reply to Coalition air attacks with an eight-shot barrage of Scuds launched at Israel between 0259 and 0327 on the morning of 18 January. The first 10 days of Iraqi missile activity were relatively intense – 26 launched at Israel and 23 at Saudi Arabia. Fortunately, many impacted in uninhabited areas and the Patriot missile proved effective enough in intercepting Scuds to provide the needed political and strategic reassurance to the endangered populations.

The planners initially calculated that placing A-10s and F-15Es on Scud alert would suffice to suppress most of Iraq's launch capability, but that was not the case. It was soon clear that only aircraft flying on station over the launch sites could locate and attack the mobile launch platforms before they escaped. Before long, the anti-Scud force was expanded to include the E-8 JSTARS (Joint Surveillance Target Attack Radar System), F-111s, and F-16s. Moreover, the suppression effort required shutting down all road traffic in western Iraq by day and night – a very tall order. It appears that a number of tanker trucks on the way to Jordan paid a severe price for having IR signatures resembling mobile launchers.

The anti-Scud effort evolved into two distinct approaches – interdict the missiles being transported from storage sites to launchers and discourage launch activity by making sure the Scud crews knew their mission was very dangerous. Special armed reconnaissance procedures were established to deconflict the fighters patrolling for the enemy missiles and to help air directors ensure efforts were concentrated in the most likely target areas. By the end of the first week, the anti-Scud campaign showed focus, leading Horner to append a note in the "Scud Log" stating: "Victory and frustration – issue never in doubt, but a high price to pay to kill a nuisance." At the end of the war, when the Iraqis began to launch Scuds from Baghdad at King Khalid Military City, it was clear that Saddam could no longer get missiles to firing areas in the east and west from those hidden storage facilities that remained intact.

## ***Shelter Busting***

Coalition air commanders had expected more of Iraq's air-to-air fighter force. Although the Iraqis flew approximately 35 shooter sorties per day in the first week of the conflict, Coalition air-to-air kills virtually ceased after the third day. Not only were the Iraqis refusing to engage, they were running at the first sign of opposition. Much of the Iraqi Air Force remained buttoned up in shelters, giving rise to concerns that the Iraqis might be planning to launch one all-out air assault in conjunction with planned ground activity once the armies engaged. While this eased the conduct of day-to-day operations, it presented the Coalition with a disturbing latent threat. The striking range of these aircraft and the much-feared inventory of chemical bombs heightened this threat.

Since the Iraqi Air Force would not come up to fight, it was now time to pry it out of its shell or kill it in place. This new target set – an aircraft in its shelter – was numerically significant. During the war with Iran, the Iraqis had engaged in an extensive shelter-construction program so that all of their major airfields were well protected. Tallil, Jalibah, Al Jarrah, Qayyarah West, H-3, and Al Taqaddum all contained numerous shelters, and those at Balad Southeast and Al Asad were reported to be among the strongest in the world, constructed to withstand even the overpressures from near-miss nuclear weapons.

On 21 January, F-111s began attacking these shelters and the next night F-117s joined the effort dropping 2,000-pound laser-guided penetrator bombs. The Coalition attackers soon discovered that one well-aimed bomb was sufficient to destroy both the structure and the contents of even the nuclear-hardened shelters. Within 5 days, more than 150 of them were systematically gutted. Although the F-111s and F-117s executed the bulk of the shelter-busting campaign, most Coalition aircraft types had a part in this decimation of the Iraqi Air Force. Faced with this loss, Saddam opted to fly out what he could to Iran. The first flush occurred on 26 January following a one-day stand-down by the Iraqi Air Force. This exodus caught the Allies by surprise. Explanations considered at the time ranged from the possibility of an air force mutiny to the possibility of a rapprochement between the former enemies that would soon see Iran joining the war on Iraq's side. In reality, the answer was much simpler. The flight to Iran was a desperate move, typical of Saddam, to salvage what he could.

While the Iranians remained on the sidelines, glowering at all of the combatants, special CAPs were established to deny the enemy an easy run to safety. Coalition fighter pilots added to their collective air-to-air success. In many cases, Iraqi pilots proved to be so inadequately trained that they ran into the ground trying to maneuver at low altitude, ran out of fuel en route to their destinations, or crashed attempting to land at strange airfields. As the picture unfolded, it became clear that the Iranians were taking custody of the arrivals, separating the pilots from their planes, and then mothballing the new additions to their air fleet. In effect, Saddam was making the first reparation payments to the Iranians for the Iran-Iraq war.

Thus, the shelter-busting campaign was the final step in removing the Iraqi Air Force as a combat factor. Most of the aircraft that remained were de-sheltered and parked among villages and historical sites, never again to pose a serious threat to the Allies. Air supremacy was in the hands of Coalition air forces. Horner and his staff could now concentrate resources on Phase III of the Air Campaign Plan.

## ***Isolating the Battlefield***

Most achievements of the interdiction campaign were greeted with little fanfare. In truth, the classic interdiction effort was the glue that bound together the strategic missions (strikes at leadership, military production, command and control) and the purely tactical missions (close





air support for Coalition ground forces moving forward on the offensive). General Powell put his finger squarely on the importance of this aspect of Coalition air plans in his press conference of 23 January, summing up for the assembled reporters:

"Our strategy to go after the Iraqi Army [in Kuwait] is very, very simple. First, we're going to cut it off. Then we're going to kill it."

To facilitate matters, connectivity between Iraq and Kuwait was minimal. There were only a few hardened roads that could be used to transport supplies, reinforcements, and messages; and these were all well-known and impossible to conceal and protect. The interdiction campaign began with attacks on Iraqi central command, control, and communication systems shortly after H-hour and continued with attacks on the Al Zubayr railroad yards the next morning. Coalition air struck around the clock at the railroad and highway bridges linking Saddam's occupation force with its homeland, at the naval facilities at Umm Qasr, at radio relay facilities, at airstrips that could support either resupply or evacuation activity, at all convoy activity, and at the transshipment facilities at Basra through which most Iraqi supplies into the KTO had to flow. By the time the ground campaign started, the interdiction campaign, combined with the relentless pounding of the occupation army and the Republican Guard divisions, had destroyed both the Iraqi means and will to fight.

Some 54 bridges along the routes from Baghdad to Basra and, thence, to Kuwait had been ranked as critical. By the end of the fighting, every single one targeted by the Coalition had been dropped, and the pontoon bridges hastily assembled to bypass them were likewise rendered useless – almost 75 structures total. The effort required to accomplish this amounted to less than 500 total Coalition sorties, slightly under one-half of one day's combat sortie production.

With isolation of the theater being accomplished systematically by selected units, others were tasked to render the enemy forces ineffective by destroying their tanks, armored personnel carriers, artillery, and bunkers. The weaponry of the primary battlefield interdiction aircraft (F-16s and A-10s) consisted predominantly of general purpose bombs, cluster bombs, and Maverick missiles. The much-heralded 30mm cannon (internal on the A-10, gun pod on the F-16) was sel-

dom used since it required low-altitude passes well within the lethal envelopes of ground fire and the numerous IR SAMs.

Ironically, the aircraft that had the most dramatic results in killing armored vehicles were the long-range interdiction aircraft with their self-designating laser-guided bomb capability. They were led by the F-111F with its first-generation (but still very effective) Pave Tack FLIR/laser targeting pod system and GBU-12 500-lb LGBs. Other aircraft participating in these night "tank plinking" operations included F-15Es with LANTIRN, Navy A-6Es with TRAM, and a few RAF Tornados with the TIALD (still in development at the time). (F-16s and F/A-18s did not employ LGBs due to unavailability of targeting pods at the time.) It was not unusual for a pilot to achieve one kill for every LGB carried. The employment of these long-range interdiction aircraft in attacking single tactical vehicles showed the versatility of the Coalition air power team in using available assets in the most effective manner, regardless of traditional roles and missions.

In Desert Storm, the strategic and tactical roles/missions were blurred. Fighters were doing strategic bombing and B-52s were pounding tactical targets. This emphatically demonstrated an old airman's adage: "Targets are strategic or tactical; airplanes and pilots are both." This experience from Desert Storm, along with the end of the Cold War and shrinking force structure, encouraged the USAF to accelerate adoption of a single power projection concept and culminated in the merger of the Strategic Air Command and the Tactical Air Command into the Air Combat Command.

## ***Khafji: Saddam's Fizzle***

Other than the initiation of the Scud campaign, Iraq's only other offensive operation during the conflict was an attempt to sting the Coalition ground forces with a swift thrust aimed down the Saudi eastern coastal road. In retrospect, it can be regarded as nothing more than a spasmodic effort to "do something" in response to the constant pummeling by Coalition air.

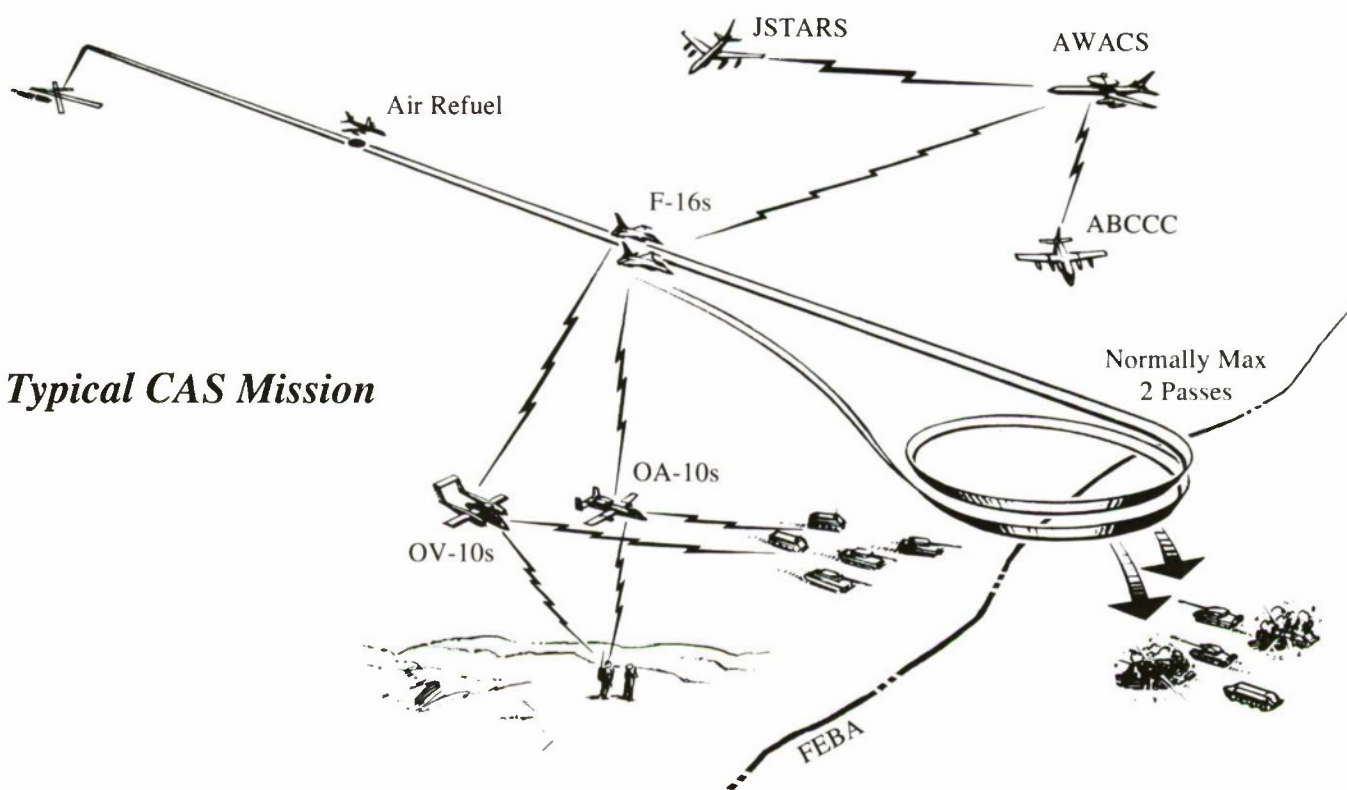
On 29 January, three Iraqi mechanized brigades, supported by a small offshore amphibious force, moved southward across the Saudi-Kuwaiti border and entered the nearby abandoned town of Khafji. Ground force commanders had



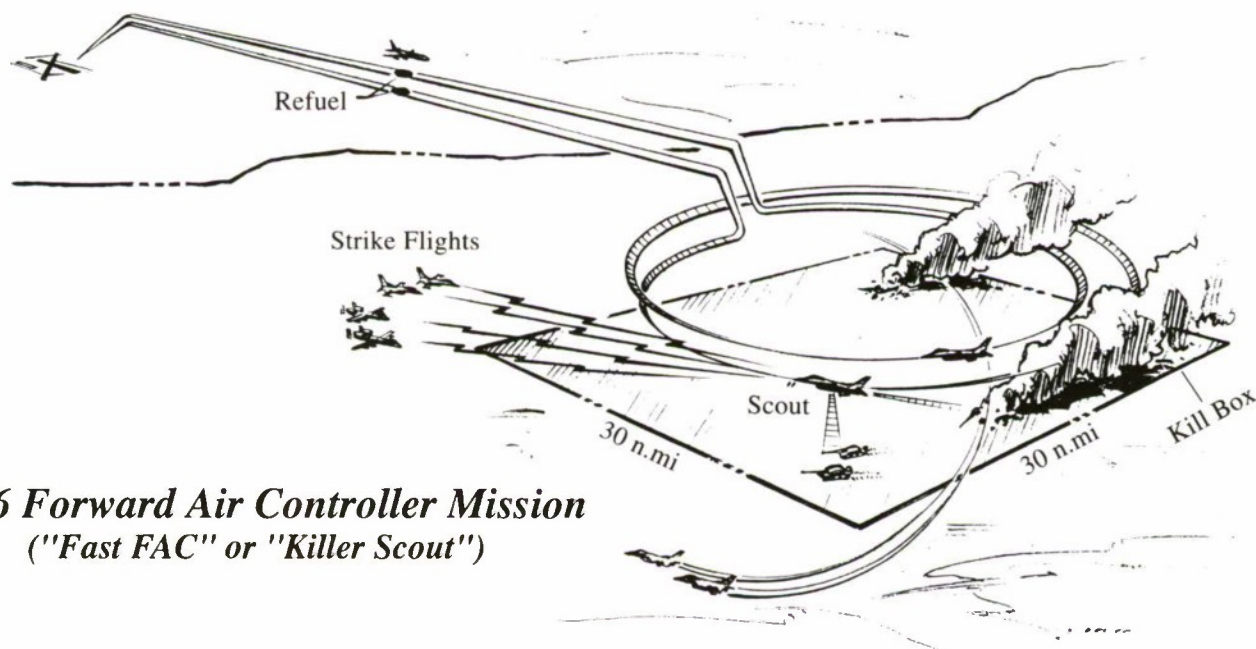
been expecting some sort of Iraqi probe, and a small but alert force of U.S. Marines, Saudi National Guardsmen, and Qatari tankers stationed there mounted staunch resistance. The call for air support was honored swiftly and effectively. While Coalition forces doggedly picked off Iraqi soldiers and vehicles, the air arm mustered everything from B-52s (used to pound Iraqi reserve forces waiting to exploit any breach in the Coalition line) to USMC Cobra helicopter gunships and AV-8B Harrier jumpjets to hammer away at the invaders. The E-8A JSTARS, which was making its operational debut in the theater, served as the ground commander's equivalent of the

AWACS; and F-16s, A-10s, AC-130 gunships, F/A-18s, and A-6Es joined the interdiction effort. Over 200 enemy vehicles were destroyed during the two days the battle was waged. During the same period, Jaguars, A-6Es, and helicopters sank the small amphibious assault flotilla before it could have any impact. With the unfortunate exception of some friendly fire incidents, the first support of Coalition ground troops by Coalition air forces had been every bit as successful as the air planners had anticipated. Coalition commanders now had full confidence that their air, land, and sea arms would work in harmony at any operational level.

### *Typical CAS Mission*



### *F-16 Forward Air Controller Mission ("Fast FAC" or "Killer Scout")*



# ***Destruction of an Army***

As preparations for G-day moved forward, Coalition air activity continued to pick up in the KTO. Strategic target sets in and around Baghdad were still attacked nightly, "the Great Scud Chase" did not slacken, and deep interdiction sorties continued to ensure that the theater remained isolated and impenetrable to potential reinforcements. But more and more resources were being shifted to the KTO battlefield.

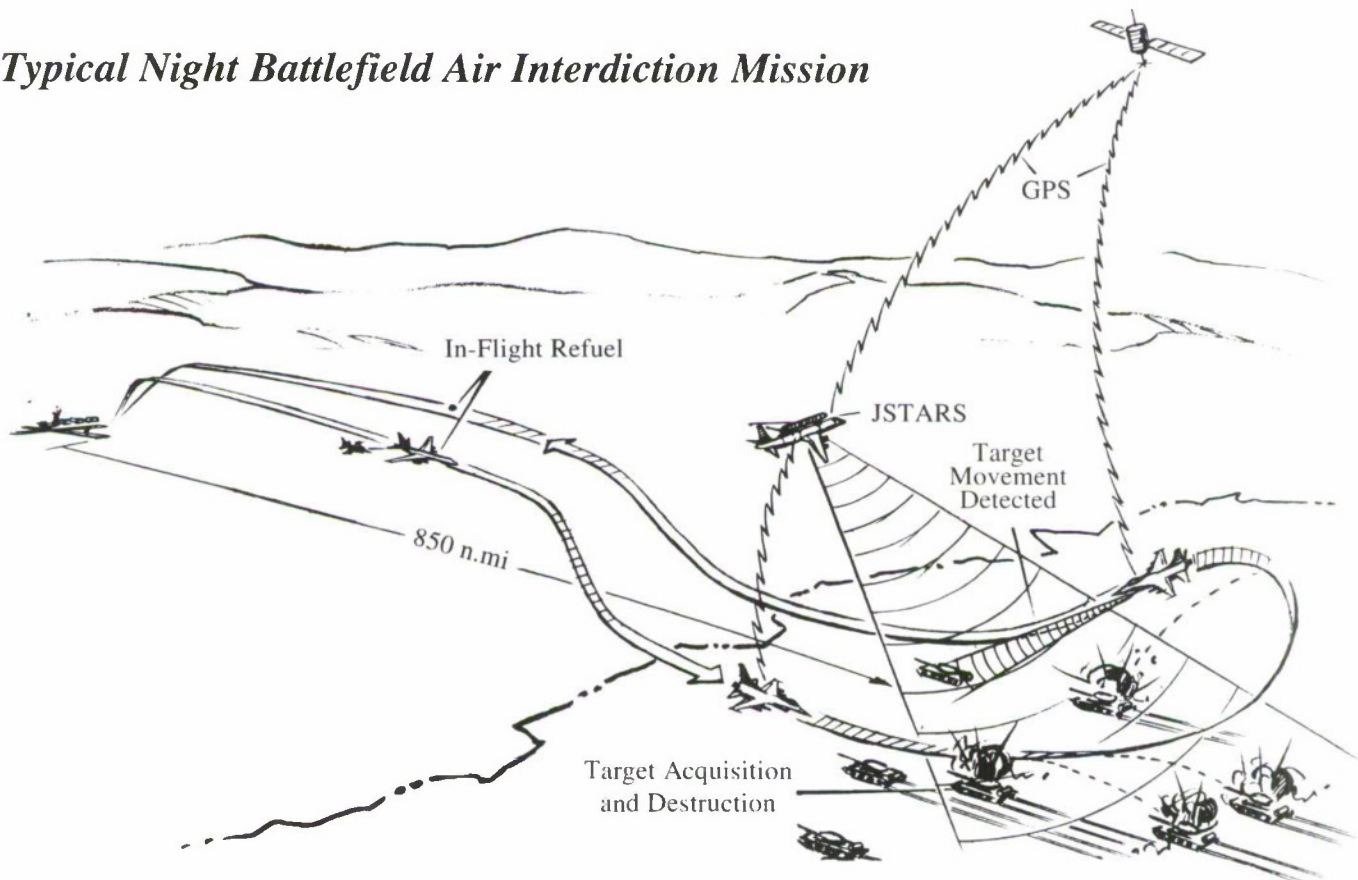
To keep constant pressure on enemy targets during the daytime and to optimize battlefield interdiction operations, Coalition planners initiated a requirement for fast forward air controllers (FAC) similar to those used in Southeast Asia in the 1960s. For this role, a squadron of Block 40 F-16s and pilots with prior FAC and/or close air support (CAS) experience was selected. The Block 40's LANTIRN navigation pod and GPS precision navigation system proved invaluable in distinguishing live targets from dead ones and in pinpointing target locations. The F-16s were called "Killer Scouts" because they carried bombs and often "marked" the targets by destroying them. USMC and USN pilots joined in the FAC effort, and the KTO was divided into "kill boxes" to separate attackers geographically. A "push" scheduling system emerged in which attack flights flowed into the kill boxes in tightly sequenced streams. Usually these were controlled by the "Killer Scouts" in order to get maximum utilization out of each aircraft and maximum ordnance on enemy targets. The Marines, who had also used the fast FAC

mission in Vietnam, had retained a dedicated capability over the years and were employing a handful of two-seat F/A-18Ds in this role in Desert Storm, mostly to control their own F/A-18s, AV-8Bs, and some Navy attack aircraft.

With debate raging in Washington over whether air power had done all it could do, President Bush dispatched Cheney and Powell to Riyadh on 5 February to coordinate with Schwarzkopf on a date for the long-awaited land offensive. Following convincing briefings by Horner and his staff, the President's key military advisors recommended that the ground offensive be deferred as long as Coalition air forces could continue to pick apart the enemy's war machine with the degree of effectiveness they had demonstrated so far.

The decision was a wise one. By 24 February, G-day, when the Coalition ground forces executed their famous "Hail Mary" flanking maneuver and breached the enemy's defensive line at several spots in Kuwait, the Iraqi occupiers had been reduced to a demoralized, hungry, sick, ineffective force. The only serious threat most could pose was to surrender in numbers that literally inundated the advancing Coalition columns. The few instances of determined resistance that did occur were easily detected and eliminated by the swarms of rotary and fixed-wing aircraft that worked in close coordination with the soldiers they escorted, covering every kilometer of the Coalition attack. The 1000-hour air war had set the stage for the 100-hour ground war in a fashion that will stand as a high-water mark in the annals of military history for as long as the subject is studied.

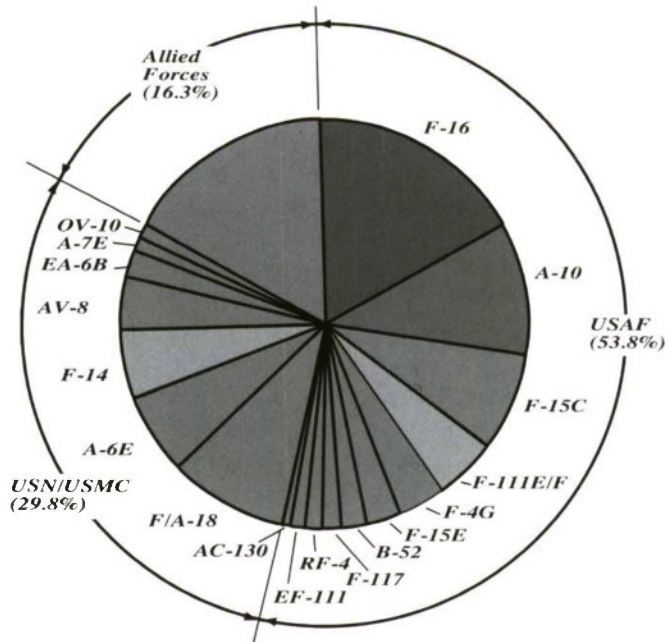
## ***Typical Night Battlefield Air Interdiction Mission***





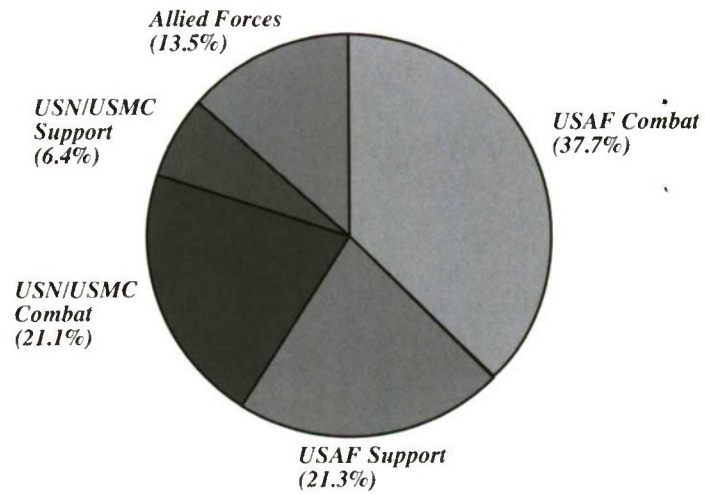
## Desert Storm Combat Sorties Flown

• 77,185 Sorties



## Desert Storm Total Sorties Flown

• 109,874 Sorties







SDS  
International

# ***What's Important – My Perspective***

An American strategist reflecting on the Cuban Missile Crisis of the early 1960s noted that comparing it with any other crisis was like "comparing a child's toy play farm with the real thing." It was almost too neat, too tidy, too organized, and too well-defined to bear any significant relationship to other crises . . . too much of a textbook example to hold any meaningful lessons for international diplomats.

Many of the same criticisms could be applied to the Gulf War of 1990-91. The political leadership was "too resolute," the Coalition of nations was "too uncharacteristically selfless," the military leadership was "too focused," and the campaign plan was "too good." The common enemy was "too evil" and "too isolated" politically and geographically. The victors had "too many resources" at their disposal and "too much time" in which to prepare. The disparities in technology, tactics, and training between the opposing forces were "too great." And the liberation of Kuwait was, for the Coalition, "too bloodless." In short, the whole episode from the invasion of Kuwait on 2 August 1990 to the declaration of a ceasefire on 28 February 1991 was simply "too good to be true" . . . a once-in-history sequence of events that could in no form or fashion repeat itself.

Is that the case? I think not. It is more important to regard the many achievements of the Coalition as examples of what can be accomplished when the tools of planning, preparation, and determination available to all nations are employed with skill and foresight to control certain war-winning variables over time. My analysis proceeds under this latter assumption with the objective of encouraging those who value independence to take up the tools and learn to use them well.

At this point, it is necessary to look first at two important situational variables – collective will and leadership. Although will and leadership are not directly controllable, they are nationally manageable over time through long range planning and deliberate nurturing.

## ***Collective Will***

One encouraging lesson from the Gulf Conflict is that if justifiable self-defense fails there is potential recourse in the collective action of extra-regional states. The nations of the world can and will act together under the umbrella of the United Nations to correct a moral and legal wrong – in this case, the attempted subjugation of a sovereign member state. The Iraqi invasion was a clear violation of the UN Charter,

and the members of the UN Security Council, supported by an overwhelming majority of the members of the General Assembly, were resolutely determined to oppose that aggression.

How any single nation responds to an act of aggression committed by another member of the international community will depend on the viability of its own political, economic, and military institutions and on its proximity to the threat. However, when there is a demonstrable collective will, as was the case in the Gulf, higher principles often surface. Deliberating as a collective body, individual UN member nations were able to see in Iraq's behavior the potential behavior of some of their own neighbors and to appreciate how that aggression, if condoned, could inspire similar aggression directed at their homelands.

Most assuredly, the member nations were acting in their own self-interest. And the respective degrees of their participation varied widely, based on ability, readiness, and national character. But it must be remembered that almost all participated in the economic sanctions imposed on Iraq; some contributed by providing economic assistance, and some made the ultimate commitment by sending forces to serve in the Coalition. Response to the Iraqi invasion of Kuwait proved beyond any doubt that effective coalitions can be formed for bringing members together in a common cause.

## ***Leadership***

Collective will is the essential precursor for collective action. However, shared purpose and conviction in and of themselves provide no guarantee that collective action will be effective. In a coalition forged to achieve military objectives, effectiveness is the product of two qualities – skilled leadership and a highly developed military capability.

Strong leadership is necessary in both the political and military spheres to give a coalition its focus, to keep it moving steadily along the path towards its goals, and to maintain its resolve. One key task of that leadership is to shape a consensus as to the alliance's objectives and then ensure those objectives remain in plain view before all of the participants throughout the ensuing course of events. Another is to establish the mechanisms through which the coalition will operate, ensuring conformity and cooperation. Yet another is to manage the forum in which issues and options are considered collectively. Command cannot be exercised



collectively, but the decision-making process must provide all participants with the opportunity to surface their concerns and ideas. Finally, leadership must set the standards of bearing and behavior by which the coalition will come to be known, demonstrating the strength of character, personal courage, and selfless dedication that must be demanded of all active participants.

The quality of leadership demonstrated within the Coalition opposing Iraq can be summed up in one word: exemplary. While leaders change, moving on and off the public stage in accordance with national custom and political practice, the leadership displayed throughout the months of crisis and conflict in the Gulf truly set new standards against which others will be weighed and measured in their handling of future crises. President Bush was decisive and resolute from the outset, immediately freezing Iraqi assets, initiating a diplomatic campaign to muster support in the UN, and, with King Fahd's blessing, deploying U.S. forces to the Kingdom and neighboring Gulf Coast states. As the Coalition evolved, he worked tirelessly to strengthen it and continue moving forward, refusing to allow the alliance to succumb to the Iraqi ploy of protracted negotiation. As an astute politician and statesman, he was very effective in obtaining a national consensus, official support of the Congress, and international support for offensive military action if all UN resolutions were not met. As a seasoned leader, he established specific political goals for military commanders in the AOR, allowed them to establish the military objectives that would achieve the political ends, reinforced their authority to direct the preparations for war, ensured they received the full support and cooperation of the entire U.S. military community, and, with the sole exception of "the Great Scud Chase," left the conduct of the war in their able hands. The fact the President was once an airman himself (albeit in another era) probably contributed to his acceptance of the "air option."

Schwarzkopf and the other military leaders proved exceptionally capable, determined, and effective as well. Our commanders wore the mantle of command like favorite golfing sweaters, issuing explicit directives that established clear lines of responsibility and authority among subordinate commanders, thus ensuring that the multinational forces of the Coalition forged ahead with united purpose. When they could not win commitment to unity of command by reason, they imposed it by the force of will and stature. U.S. military services were also united under the Goldwater-Nichols Defense Reorganization Act. In this first true test of the act designed to force the U.S. military services into joint harness, the reins of unity were guided with assurance, strength, and a clear vision of the destination.

On the airmen's side, Horner and Glosson and the many other JFACC commanders mirrored the finest qualities of unified command. Professional and dedicated officers, each played a part in systematically orchestrating the complex planning processes involved in bedding down, supplying, and organizing the growing force; charting and supervising the intense preparations of the Black Hole crew in building an air campaign plan of stunning scope; instituting building-block training programs that molded the Coalition air arm into a

responsive and wholly integrated fighting force; and, with unfailing determination and resolute balance, crafting the most potent coalition of air forces ever assembled in the history of warfare.

## ***Variables***

Notwithstanding situational considerations, the ultimate outcome of any conflict depends on the interaction and interplay of many complex variables. Variables such as collective will and leadership are time-sensitive and often politically motivated and lack specific controls while others such as weather are not controllable and may not affect the combatants equally. The Gulf War very clearly displayed the results of managing four key long-term control variables – technology, planning, training, and interoperability. The lesson here is that these elements were controlled well in advance of the conflict to produce a ready force that could be called upon when and where it was needed. Proper management or control of these variables is essential to effective national and international security.

## ***Technology***

The Gulf War illustrated that one major advantage of coalition warfare is being able to call upon the specialized technologies of many nations. In this case, that amounted to an almost bewildering diversity of sophisticated, special-purpose aircraft and weapons. Although stealth and precision-guided munitions (PGMs) captured most of the public attention, many other systems and weapons either proved or re-proved their value in the Gulf War. In some cases, Gulf combat experience identified shortcomings in equipment that resulted in accelerated development and delivery of new hardware/software and shortcomings in operational plans that resulted in modification of employment tactics. While managing these high-ticket assets caused Coalition planners many headaches, their discomfort was nothing compared to the nightmares experienced by Iraqi defenders trying to cope with "the weapons of tomorrow" being used against them "today." As events proved, those high-technology assets played a critical role in producing the victory efficiently and safely. The USAF, in particular, had been concentrating on high-tech enhancements for many years, and this effort had produced a host of sophisticated weapons and weapon systems that were effective, reliable, maintainable, and supportable. The list includes cluster munitions, various PGMs, all-aspect/all-weather air-to-air missiles, night attack capability, precision navigation, standoff surveillance/intelligence systems, and survivability enhancement aids (stealth, ECM, standoff jamming, lethal SEAD, ESM).

**Munitions.** Most precision-guided munitions such as laser-guided bombs and Maverick missiles are certified for carriage on all USAF aircraft with an air-to-ground capability (F-16, F-15E, F-111, F-117, A-10) and, for the most part, are readily available to even small air forces. Furthermore, as was





demonstrated time and again in the Gulf War, PGMs permit pinpoint destruction of legitimate military targets without generating extensive collateral damage. Aside from a relatively few incidents of fratricide in which crews misidentified Coalition vehicles as enemy and the highly publicized Al Firdos attack on 13 February in which some 100 Iraqi civilians who were sheltered in a military command and control bunker were killed, the only victims of PGMs were Iraqi combatants, military hardware, structures, and facilities serving Saddam's war effort.

The accuracy, effectiveness, and reliability of PGMs in the Gulf War have guaranteed a place for "smart weapons" in all future campaigns where point targets (armored vehicles, aircraft shelters, small structures, bridges, and vital components in a manufacturing complex) constitute key elements in the enemy's war-making capability. The ability to "kill" one target with one weapon multiplied the effectiveness of Coalition air forces several-fold and eliminated the requirement to revisit the same targets day after day. The efficiency of the PGMs, combined with the high-altitude/standoff delivery, contributed significantly to the low Coalition loss rate.

"Smart weapons" increased the "IQ" and lethality of several "dumb" airplanes, such as the relatively unsophisticated A-10. The addition of FLIR/laser designator pods (Pave Tack on F-111Fs and LANTIRN on F-16Cs/F-15Es) made the already smart airplanes literally "brilliant." Through haze, light rain, battlefield dust, and the smoke from burning oil wells, they relentlessly tracked down and eliminated enemy threats day and night. Denying the Iraqi army a night sanctuary was significant in destroying both its ability and will to fight. Night operations also enhanced the survivability of the attackers.

Several articles have been written that were critical of the F-16 for its lack of PGM employment. The explanation is simply a matter of availability and best utilization of assets. The USAF quantity of Maverick missiles was limited and those available were assigned almost exclusively to the A-10s. This was done because the A-10 could not match the accuracy or survivability of the F-16 in delivery of unguided bombs. Three squadrons of F-16s (about 30% of the F-16 force) in the Gulf were LANTIRN-capable; however, no LGBs were employed on the F-16s because the handful of LANTIRN targeting pods available at the time were all assigned to the F-15Es. Since the Gulf War, F-16s have been replacing A-10s in the U.S. inventory and, with over 300 LANTIRN sets, will comprise half of the USAF's night and LGB capability.

Because smart weapons and the associated aircraft targeting systems are expensive, they will never completely replace unguided munitions. There will always be a need for the less expensive munitions where pinpoint accuracy is not required. For large, heavily defended area targets with multiple aim points (factory complexes, sprawling military camps, large airfields, storage yards, assembly areas, troops in the open), one-weapon-per-pass attacks may not be the tactical choice. When intelligence and reconnaissance systems are unable to identify the critical nodes in a target complex, saturation coverage may provide the best means of probing out vulnerable spots. Where jungle canopy and effective camouflage obscure aim points or extensive use of decoys creates too many of them, stick bombing may still offer the most cost-effective means of achieving significant damage. Unguided cluster munitions can yield multiple kills per pass, whereas PGMs are good for only one target per pass and often expose the delivery aircraft for extended periods.

**SEAD Assets.** The Coalition's electronic warfare forces again proved the value of denying an enemy the unimpeded use of his radar for early warning and SAM guidance. The awesome SEAD campaign waged by jamming aircraft, HARM shooters, decoys, and even strike aircraft during the first 24 hours of the war dealt Iraq's integrated Kari system a blow from which it was never able to recover. Continuing attacks throughout the campaign kept the Iraqi air defense system practically neutralized. Because of this effective SEAD effort, the Coalition was able to claim unchallenged air superiority throughout the AOR and was free to impose air supremacy in any section and at any time it elected to do so. After the war, Horner described the initial SEAD campaign as having placed Iraq and its forces in the position of a "tethered goat, being pounded to death from beyond its reach." Today, most of the dedicated F-4G "Wild Weasels" are being retired, and future plans call for this mission to be performed by multimission F-16C and F-15E units in an "every man a shooter" concept.

**Surveillance/Reconnaissance Systems.** The inability of the planners to obtain sufficient current, all-weather tactical reconnaissance coverage emerged as an unsuspected deficiency with major operational significance in terms of effectiveness assessment and retargeting. Although a limited number of RF-4C reconnaissance aircraft were used, their older technology film systems did not provide the war planners with the timely reconnaissance needed. Similarly, the reliance on overhead systems imposed unacceptable time delays. Interpretation of video footage from aircraft recorders was marginal at best. All these problems forced unplanned work-arounds and reinforced the need for an operationally responsive reconnaissance system replacement. Although still in development, the advanced high technology reconnaissance systems are being designed to satisfy these deficiencies. They are currently intended to be employed on the F-16 in an external pod configuration so that future combat planners will have the flexibility of using any compatible F-16 as a reconnaissance platform.

AWACS, JSTARS, TR-1, Rivet Joint, and other airborne surveillance and reconnaissance systems all contributed substantially to presenting the fluid operational picture. The E-3



AWACS contribution in surveillance, intercept control, and air traffic control was no surprise because of the decade of extensive experience with this essential capability. Only two developmental E-8 JSTARS aircraft existed at the time. They were rushed into the theater and proved to be valuable assets in mapping enemy battlefield positions and in detecting and interpreting enemy vehicular movements. It was clear in the end that we had monumental amounts of data and various levels and compartments of analysis, but it was also clear that the fusion required to produce an accurate and reliable picture of the battlefield in time to adjust, retarget, preempt, and take advantage of developing situations remains a challenge for the future.

**Stealth.** The F-117, the first "low observable" aircraft fielded, justly received ringing acclaim for its achievements and added the word "stealth" to the vocabulary of every CNN war-watcher around the globe. It proved in a convincing way that the technology not only exists but works and guaranteed that designers of future aircraft will attempt to incorporate as much stealth as possible without undue tradeoffs in performance, cost, or supportability. Two drawbacks of the aircraft illustrated in the war received little note and need to be addressed here to keep technological contribution in perspective.

First, stealth is currently very expensive . . . and exclusive. Few nations possess the financial resources to acquire the technology, produce the aircraft, or maintain these aircraft. And it is unlikely that those who do possess this technology will broadly export it until they have developed adequate countermeasures for themselves. Those who possess such specialized assets can count on being invited to participate in future coalitions.

Second, the F-117 performed its role marvelously, but it was a highly limited role with no flexibility for expansion. It is a subsonic aircraft with limited maneuvering capability. It operates at medium altitudes and relies on passive IR sensors for target detection. With no radar, air-to-air defenses, or active countermeasures, it is almost exclusively a night-time asset that requires clear weather over the target. It is limited in weapon inventory and payload. The F-117 clearly will remain a prized possession in the USAF arsenal, but as a complement to other capabilities rather than as a replacement for them.

**The "ilities."** Perhaps the greatest force multiplier demonstrated through technology improvement was the increase in reliability, maintainability, availability, and, in the long run, sortie rates, mission effectiveness, and affordability. Even in the harsh environment of blowing sand, high heat, round-the-clock operations, critical aircrews, "heavy workouts" in the target area, austere operating conditions, and supply workarounds, the aircraft and supporting systems were energized and performed and performed and performed. All the indicator rates stayed up during sustained high-tempo operations. The investment in "ilities" during the 70s and 80s produced up to several times the air power at no increase in cost over 20 years ago.

**Applying Technology.** To paraphrase Jack Nicholson as The Joker (admiring his opponent's equipment in the movie *Batman*): "Where did the USAF members get all those marvelous toys?" The answer is that they developed them. Contrary to popular belief, sophisticated military hardware

does not pop out of corporate or government laboratories, ready to be strapped to an airframe and flown directly into battle. The process of translating technological principles into workable hardware and software and then perfecting a fit between the weapon or sensor, the carrying vehicle, and the crew member is a complex one. Even the application of well-known basic technologies can be a jigsaw puzzle of trial and error, experimentation, analysis, and evaluation.

In the beginning, the development process requires visionary conceptualization – perceiving how a particular technology might be applied to solve a military problem or attack a weakness. From there, it advances through a meticulous, systematic examination of alternatives – weighing cost against gain, performance against reliability/maintainability, and operational effectiveness against training requirements and compatibility with existing systems. In the final stages, operational test and evaluation programs refine man and machine capabilities, employment tactics, and procedures. There are no shortcuts, but the procedures are available to all nations committed to obtaining maximum effectiveness for every component of their defense arsenals . . . from communications systems to fighter aircraft.

**Payoffs.** The Gulf War demonstrated that this ongoing process works and that it is worth the effort and expense. The "marvelous toys" that served Coalition airmen so effectively were the products of a continuing process of step-by-step refinement that exploited the growth capability, flexibility, and versatility designed into most modern aircraft, enabling their lethality and survivability to be increased continually. Strap-on/plug-in systems, such as LANTIRN, GPS, ATARS, and electronic countermeasures suites, will enable future air warriors to tune their versatile aircraft and remain at the leading edge of battle technology. Innovative tactics, such as the A-10's employment of IR Maverick seekers for a limited nighttime search capability, allowed them to wring fullest possible use out of every piece of equipment. The Gulf War showed unmistakably the rewards available to those who make technology serve their ends.

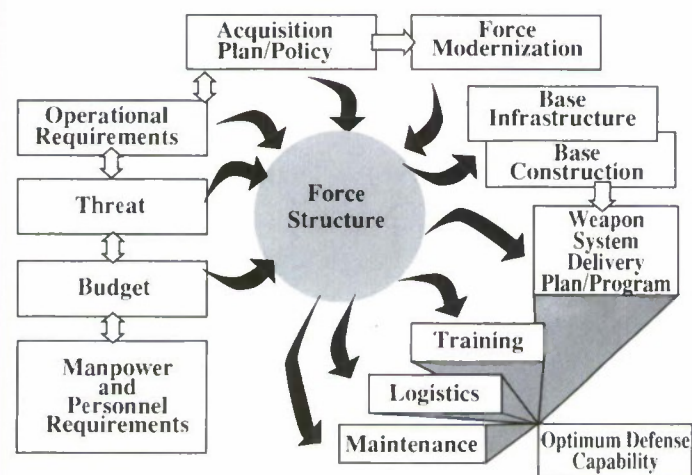
The USAF was well-prepared to execute this type of air campaign. The forces consisted of both versatile and specialized high technology systems and weapons. They were given the luxury of time to employ the whole variety of specialized systems and to use each system's unique capability in a precisely defined and orchestrated role that made the whole force more effective. However, the specialized assets also displayed limitations as noted earlier and under different conditions might not have taken center stage. The systems that really hit the mark (as most effective, most versatile, and least costly) were multirole aircraft. This was clearly demonstrated in Desert Storm, where the USAF's workhorse multirole fighter – the F-16 – was employed throughout the theater and performed in a wide variety of air-to-air and air-to-ground missions. This contrasted with the dedicated air superiority aircraft, which had little to do once their objective had been accomplished early in the war. Without question, multirole aircraft properly configured with strap-on sensor pods and a variety of weapons (including advanced PGMs) will provide future regional commanders with many employment options and much more flexibility in a fluid combat environment.



# Planning

Without understating the bravery and effectiveness of Coalition airmen, it can be asserted in all truth that the war fought in the skies over Iraq and Kuwait basically was won around desks and tables in the offices where staff personnel drafted, expanded, and refined the plans that assembled the Coalition forces, positioned and supported them, and focused their efforts. War planning – unglamorous, seemingly either frantic or boring with no middle ground – is a specialized field in the art of war that is often studied but seldom mastered. A look at some of the general aspects of planning in the Gulf War should be of interest to all, but most particularly to those states who could find it necessary to seek assistance from outside forces at some time in the future.

## Strategic Planning



Military planning is basically a vehicle for mobilizing and applying force. It generally has one of two overall objectives: deterrence, which amounts to discouraging or preventing a potential opponent from pursuing a particular course of action, or "compellence," which, according to a definition offered by Thomas Schelling, amounts to forcing an opponent to do something against his will. The knowledge that plans for either deterrence or compellence exist may serve as a deterrent, but only if credible. While Saddam may or may not have been aware of CENTCOM's planning for defense of the Arabian Peninsula, it is apparent that he did not consider the states of the peninsula or outside powers either capable or willing to oppose his invasion of Kuwait.

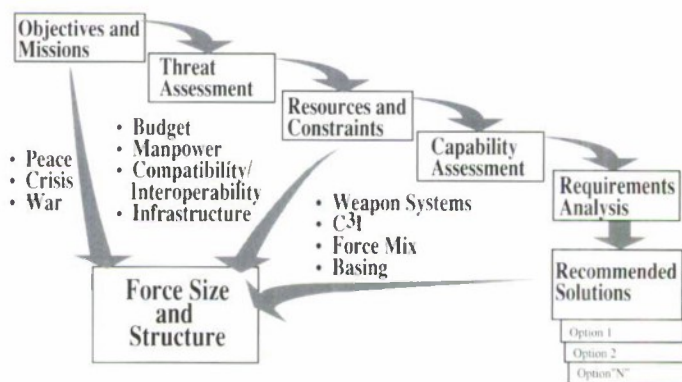
In reflection, he had little reason to believe it at the time. Yes, the United States was a staunch supporter of Saudi Arabia, and, yes, the President had sent American military forces into Panama less than 8 months earlier to oust Manuel Noriega. But, unlike Panama, Iraq had one of the largest military machines in the world, it was 8,000 miles away, it had a duly elected and popular government, and American military had no precedent of land-based presence or intervention in this region. The United Nations had yet to achieve demonstrable

consensus on any issues related to the Middle East and had not fielded forces for other than peace-keeping purposes since the Korean War. While Iran represented a potential wild card, Saddam most probably concluded that the Shiite Persians would be more likely to take a curse-on-both-their-houses view of his assault on the Sunni Arabs of the peninsula.

Whatever the reasoning, deterrence failed and compellence became necessary. Saddam's totalitarian regime probably had a very limited and blurred understanding of world politics and clearly miscalculated the resolve its invasion would trigger in Riyadh, Washington, and New York. Of equal significance, it miscalculated the capabilities and morale of the U.S. and Coalition fighting forces, the logistic capability of the U.S. Transportation Command, and the talent of the planners in CENTCOM, particularly those in the Black Hole.

The essential first element of planning is the definition of objectives – the clearer the objectives, the more straightforward the planning problem. The objectives given to Schwarzkopf and Horner by the President were explicit and unambiguous: eject Iraq from Kuwait and eliminate Saddam's ability to threaten regional stability. These instructions did not make planning easier. However, they did make it clear that an enormous force would have to be moved to the peninsula (including difficult-to-transport heavy armor forces), it would have to be supported during whatever period of preparation might be allowed, and it would have to be supplied throughout a potentially long and costly war. Although these instructions did not make planning easier, they did simplify the task by laying out the full scope of the problem at the outset.

## Planning Framework



Operational planning is based on knowing what you want to achieve and what the enemy has to prevent you from achieving it. Logistical planning is based on the determination of what is needed to overcome the enemy's resistance, where it should be placed for maximum effectiveness, and how long it has to be kept there. Ideally, the operations and logistics planning processes go forward in parallel. More often than not, however, they lurch forward separately, one alternately leading, then lagging, until at some point (realized only in retrospect) they



come together as a sustaining and mutually reinforcing system. This was the case in the Gulf. As noted earlier, the lack of prior planning with the states of the peninsula had prevented CENTCOM from developing more than notional deployment plans. Given the immediacy of the Iraqi threat and the prospect of losing parts of the peninsula from which to operate, King Fahd opened the Kingdom to foreign forces, and CENTCOM began working a "push" system to deliver combat capability to the AOR as rapidly as possible. When Oman, Qatar, Bahrain, and the UAE opened their facilities as well, the possibilities of assembling a truly massive, although widely dispersed, Coalition force became real.

In this climate of urgency, forces began arriving in the area while there were little more than cursory plans for their use. Fortunately, the excellent infrastructure existing there and the willing cooperation from host nation officials obviated the requirement for much of the bulky logistical support that normally would have had to be delivered – petroleum products, communications systems, food, water, and some of the basic military parts, spares, and support equipment. As the Saudis had long recognized, a country whose national security may be assured only through the combined efforts of the international community does well to develop its defense capabilities with an eye on its potential allies. The combination of unqualified host support and effective improvisation by the Coalition's planners soon set in place a peninsula-wide logistics infrastructure of unprecedented breadth and depth. Years of American concentration on prepositioning and on improving military mobility paid off, and airlift and sealift forces were able to deliver and support the necessary troops and equipment in a reasonable time frame.

Based on the initial force structure available, planners had focused first on repelling any attempted Iraqi invasion of the Kingdom. With the rapid growth of forces, planners were soon able to confront the task of how best to accomplish the President's assigned objectives. The evolution of the air campaign plan, discussed earlier, will not be addressed again. However, its strong points do merit iteration.

First, the planners viewed the enemy's capability as being the product of political, military, and economic institutions and determined to attack simultaneously and forcefully at all aspects of this capability. Air power would not be used to send political "messages." It would be used to achieve decisive, quantifiable effects that would significantly lessen the Iraqi capability to function militarily.

Second, for the first time in American history, air power was to be employed as an indivisible entity, massed and centrally focused. All of the theater's air assets would be orchestrated in unison to achieve synergistic results.

Third, the first military goal set for air power was achieving air superiority. Horner and Glosson, convinced that the success of the remainder of air operations was likely to hinge on air superiority, refused to let their planners "assume away" this precondition.

And fourth, having developed a good air campaign plan, Coalition air commanders refused to let their focus be lured away from it as long as it continued to produce the desired results. Employment practices that did not appear to be

working were abandoned, and practices that did were kept in perspective. Innovation that solved a problem or satisfied a need was encouraged. Innovation for the sake of novelty was quashed immediately. Horner never permitted his staff or the other CENTCOM senior personnel to lose sight of the intended objectives and by so doing maintained a sense of balance and proportion that ultimately produced a stunning and absolute victory.

## Training

Focused, intensive, realistic training is one of the major keys to success in combat. As the Iraqi Air Force demonstrated, highly capable equipment has limited value in the hands of those who, for all their will and courage, lack the ability to operate it properly. Realistic training sharpens individual physical skills, reinforces systems knowledge, instills personal confidence, fosters self-discipline, and enables the operator to exploit all of the capabilities inherent in his equipment. Joint training allows the airman, soldier, sailor, and Marine to learn how to work together in the most complementary fashion possible, inspiring trust and camaraderie that multiply their effectiveness as a unified fighting force. Combined training, bringing together the aircraft and systems of several countries, enables crewmen to develop effective standardized procedures for operating together, to acquire an understanding and appreciation of their respective strengths and weaknesses, and to devise employment tactics that capitalize on the strengths while minimizing the impact of the weaknesses. Combined training usually taps competitive pride and motivates individuals to strive for the highest standards of performance possible.

The exceptionally high skill level of Coalition pilots was the product of building-block training programs that prepared them in peacetime for the tasks they were called upon to

### *Realistic Training*





perform in war. Many had participated in the various "Flag" exercises (USAF's Red Flag and Green Flag and Canada's Maple Flag), all designed to train crews for combat in realistic environments. Some had been trained in air-to-air operations by USAF "Aggressor" pilots, who had demonstrated to them the tactics and performance they could expect from likely enemies and coached them in the countermoves most effective for their particular aircraft. Many were graduates of USAF's Fighter Weapons School or advanced flying courses for their type aircraft, and the most senior airmen had combat experience from Southeast Asia. Most had been given the opportunity to employ live air-to-air or air-to-ground ordnance; to participate in large force exercises; to conduct coordinated and sequenced attack profiles at high, medium, and low altitudes; and to practice all of the roles of which their aircraft were capable.

The combat force that the Coalition sent into the skies over Iraq and Kuwait was the most highly trained, efficient, and potentially effective force ever brought together, both as individuals and as a collective whole. During the buildup period of Desert Shield, they acclimated to the new environment, refined individual skills, and tailored and became proficient in tactics and procedures. They even rehearsed some of the opening day's missions in detail, although only a few in leadership knew these were part of the real plan. By implementing strict rules of engagement, establishing mission-oriented safety programs, and enforcing standardization in practices and procedures, Coalition air leaders molded their talented multinational force into a unified air arm with one purpose, one will, and the ability to act together to achieve its goals. The results proved the practice.

## ***Interoperability***

One of the Gulf Coalition's principal strengths was the ability of its members to operate together smoothly. While training and working together during Desert Shield played an important part in developing this quality, the existence of common and compatible practices and systems was no less important. Pre-existing interoperability may ultimately determine whether a military coalition succeeds or fails in achieving its aims. Base infrastructure design and layout should take into account the ramp space requirements for reinforcement airlift, proximate storage compounds and holding yards, supplemental revetted or sheltered dispersed parking locations for reinforcement fighters, additional building space for operations and maintenance functions, and secured munitions storage areas adequate to handle extra capacity. Sanitation facilities

should be designed to the maximum feasible capacity. Tenting and basic building materials can be stockpiled at minimal expense, and sources of engineering equipment and other potential supplies on the local economy identified and monitored. The Coalition forces that came from NATO, with their emphasis on interoperability, showed they could deploy far away and still fight together effectively and operate in unison in unfamiliar conditions.

Inexplicably, Saddam gave the Coalition time – time to mobilize, deploy, plan, adjust to each other, and practice. In retrospect, that fateful question again looms – What could have happened? It would be unrealistic to expect such favorable circumstances to be repeated. In the next conflict, it is far more likely that outside reinforcements will have to fight their way into the theater and build up a logistics and maintenance base while under attack from the enemy. Under optimistic circumstances, individual fighter squadrons and brigade-size army units might be assembled in-country prior to an outbreak of hostilities, with a small naval battle group providing support from the nearest coast. Recognizing the limitations such conditions would impose, all observers of the Gulf War must consider what steps they should take in the near term to build a coalition prepared to fight a future war that might not provide time or attention prior to the initiation of hostilities.







SDS  
International

# ***What Now***

## ***Conclusions***

**A**ny conclusion about what is or is not important in a war may depend largely on where one sits – from what perspective one views the conflict. Certain "lessons learned" from the Gulf War undoubtedly will be different for the countries of the Middle East than for those of the Western Hemisphere or Pacific Rim. On the other hand, some of the lessons worth learning apply to all regions and countries concerned with maintaining their security and sovereignty into the 21st century.

Of the many efforts made to capture the "important" lessons of the Gulf War, most reflect the bias and perspective of the authors. This report is no exception. It is influenced by my bias toward air power and by my solemn belief that the events of early 1991 were made to unfold as they did because of a conscious and judicious selection of correct alternatives, at appropriate times, from among the many options and variables available.

For most of this century, the application of air power has offered much in principle but delivered substantially less in practice. In the Gulf War, for the first time, it not only lived up to the promises of airmen, but exceeded them. For the first time in history, an army was driven to its knees by the systematic, relentless application of air power. For the first time in history, air power was focused towards the achievement of a specific, realistic set of military objectives. All of the air power resources within a theater were controlled and coordinated in such a way as to permit maximum efficiency and provide maximum weight of effort when and where it was needed. The results of this effective application of air power are obvious: one of the largest tactical field armies in history was quickly and thoroughly defeated with unbelievably low numbers of Coalition combat casualties. On the other hand, a conventional, traditional frontal-assault by land forces against a well-entrenched enemy would have resulted in many thousands of casualties on both sides. The approach taken probably saved a lot of enemy lives as well. The comprehensive, well-designed and executed air campaign and optimum employment of combat air power was, in effect, a life-saving operation.

Some have postulated that the Gulf War was the last conflict of the Cold War era, but most experts agree it was the first of the Post-Cold War era. Whether or not that

generalization holds true, most knowledgeable observers believe the most likely future conflicts will be intranational or regional rather than global. Whether stimulated by historical border disputes, ethnic and religious differences, or merely the perception of opportunity on the part of an ambitious neighbor, conflicts will tend to be regionalized and will most likely occur in those parts of the world where a potential aggressor believes his victim to be incapable of self-defense, irresolute, and isolated. Diplomatic intimidation may or may not precede a resort to violence, depending on whether the potential aggressor believes a threat is more likely to produce the gains he seeks or alert the victim to his intentions and stiffen the will to resist.

Nevertheless, the end of the Cold War has resulted in a fragmented international system where, for the first time in 50 years, superpower dominance no longer serves as a constraint to adventurism by would-be regional strongmen. Small states are obliged to find a common basis for cooperation with other small states in their "global neighborhood" and to develop mutual defense alliances through which to multiply their individual strengths as a deterrent to aggression. An often-quoted Arab proverb states, "I and my brothers against my cousin; I and my cousins against the world." It is imperative for states today to examine their family lineage closely and define for themselves, pragmatically and rationally, who is a potential brother, who is a potential cousin, and who is the potential outsider to be defended against.

Equally important, once alliances have been established, the participants must plan together and work together in order to give their deterrence credibility. The absence of a credible self-defense capability, individual and collective, for small regional states is an invitation to misadventure by strong opponents. By invading Kuwait, Saddam demonstrated his miscalculation of both the will and ability of the wealthy-but-small nations of the Arabian Peninsula to protect their independence. The existence of a stronger, regional self-defense capability that was both visible and credible might not have deterred the Iraqi dictator from his chosen course of action, but it most certainly would have given him more pause to reflect on the potential cost. And when the potential cost can be made to appear high enough, even the most ruthless of aggressors will usually turn to other courses of action.





Given that a coalition capability seems the preferred one for the foreseeable future, what should individual nations do now to provide a strong defense and prevent aggression like that in Kuwait?

I recommend eight primary activities:

- Upgrade primary infrastructure items such as runways, ramps, shelters, maintenance facilities, and personnel facilities required to support and sustain coalition partners with modern equipment.
- Identify prepositioning locations and storage facilities for potential coalition partners.
- Develop, host, and conduct realistic tactical training exercises that will establish a high state of readiness and a qualitative edge in military forces.
- Initiate the development of realistic operational planning events with coalition partners.
- Prepare a force modernization road map to guide long-term development and acquisition of equipment

that will improve air power capabilities and contribution to coalition operations.

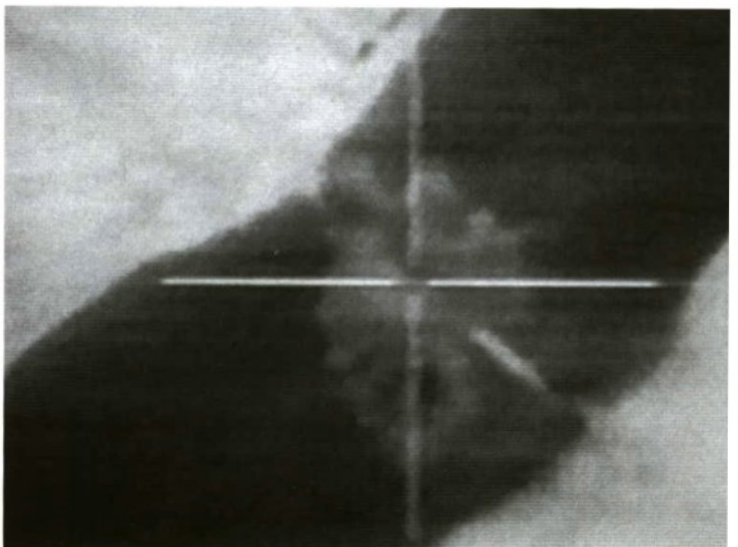
- Plan, program, and budget for forces and systems that have commonality and interoperability with systems of likely coalition partners.
- Identify, fund, and pursue cooperative research and development programs with coalition partners.
- Control the variables of technology, planning, training, and interoperability through sound program management and review practices.

Attention to these activities, within national priorities, will promote regional communication and understanding at all levels, both private and public. And in the end, communication and understanding will contribute to lower friction and moderating solutions in the international arena. National authorities should start now, analyze their perspectives, anticipate, plan, coordinate, and invest in the emerging order of regional coalition.

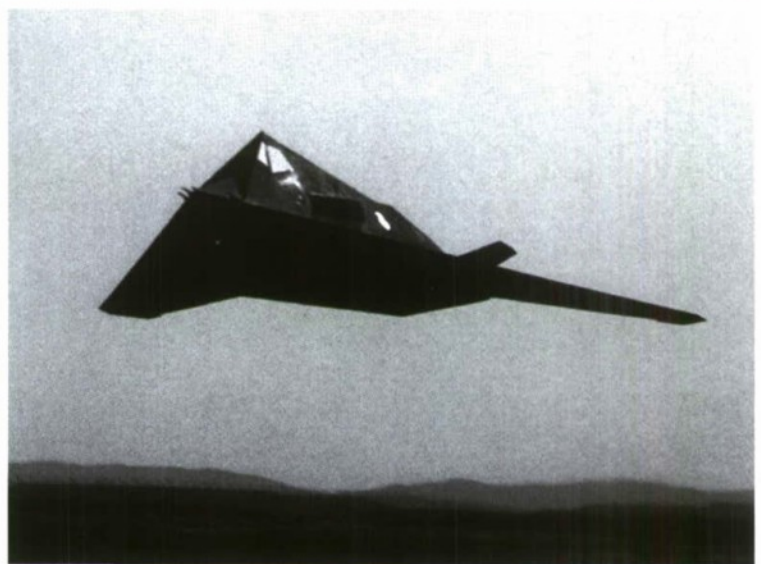


# List of Acronyms

|                       |  |
|-----------------------|--|
| AAA .....             | Anti-aircraft artillery                              |
| AAR.....              | Air-to-air refueling                                 |
| ADOC.....             | Air defense operation center (Iraq)                  |
| AOR.....              | Area of responsibility                               |
| ARCENT .....          | CENTCOM Army Component                               |
| ATARS.....            | Advanced Tactical Airborne<br>Reconnaissance System  |
| ATO .....             | Air Task Order                                       |
| AWACS .....           | Airborne Warning and Control System                  |
| BDA.....              | Bomb damage assessment                               |
| BVR.....              | Beyond visual range                                  |
| C <sup>3</sup> I..... | Command, control, communication,<br>and intelligence |
| CAFMS .....           | Computer Assisted Force Management<br>System         |
| CAP .....             | Combat air patrol                                    |
| CBU .....             | Cluster bomb unit                                    |
| CENTAF.....           | Central Command Air Force                            |
| CENTCOM .....         | United States Central Command                        |
| CINC .....            | Commander in Chief                                   |
| CRAF.....             | Civil Reserve Airlift Fleet                          |
| ECM .....             | Electronic countermeasure                            |
| ELINT .....           | Electronic intelligence                              |
| EUCOM.....            | U.S. European Command                                |
| EW .....              | Electronic warfare                                   |
| FAC.....              | Forward air controller                               |
| HARM.....             | High-Speed Anti-Radiation Missile                    |
| IADS.....             | Integrated air defense system (Iraq)                 |
| IOC .....             | Integrated operations center (Iraq)                  |
| IR .....              | Infrared   |
| JFACC .....           | Joint Force Air Component Commander                  |
| KAF .....             | Kuwait Air Force                                     |
| KTO .....             | Kuwaiti Theater of Operations                        |
| LGB .....             | Laser-guided bomb                                    |
| MAC.....              | Military Airlift Command                             |
| OPLAN.....            | Operation plan                                       |
| PGM .....             | Precision guided munition                            |
| ROE.....              | Rules of engagement                                  |
| RPV .....             | Remotely piloted vehicle                             |
| RSAF.....             | Royal Saudi Air Force                                |
| SAC .....             | Strategic Air Command                                |
| SAM .....             | Surface-to-air missile                               |
| SEAD.....             | Suppression of enemy air defenses                    |
| SOC .....             | Sector operations center (Iraq)                      |
| SOC .....             | Special Operations Command (U.S.)                    |
| TACC.....             | Tactical Air Control Center                          |
| TALD.....             | Tactical air-launched decoy                          |
| TLAM.....             | Tomahawk land attack missile                         |
| TRANSCOM.....         | U.S. Transportation Command                          |
| UAE.....              | United Arab Emirates                                 |
| UN .....              | United Nations                                       |
| UNSC .....            | United Nations Security Council                      |
| U.S. ....             | United States  |
| USAF.....             | United States Air Force                              |
| USMC.....             | United States Marine Corps                           |
| USN .....             | United States Navy                                   |
| WSEP .....            | Weapon System Evaluation Program                     |









## *More About the Authors*

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Colonel George Gennin is Senior Vice President and Chief Operations Officer of Systems & Defense Services International. Col Gennin is an acknowledged test and evaluation expert, threat tactics and systems expert, and a primary author and coordinator of the USAF tactics manuals (MCM 3-1) for all U.S. fighters.

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Colonel William Flood is Senior Vice President and Chief Financial Officer of Systems & Defense Services (SDS), International. He is a recognized expert in Operational Test and Evaluation (OT&E) and was Green Flag Exercise Director responsible for planning and developing tactics, techniques, and procedures for warfighting integration of electronic combat assets and capabilities through the Green Flag and Blue Flag exercise training programs.

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Colonel Brian Wages was Advisor to the Commander of Allied Naval Forces aboard the USS Blue Ridge in the Persian Gulf and coordinated the integration of Navy air assets into Desert Storm war plans. Prior to 1982, Colonel Wages served in numerous staff and flying positions including duty as a Middle Eastern planner in the Pentagon.

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General Tom Hall was a highly regarded commander and trainer of many of the crews who led and flew in Desert Storm. He was Commander of the 57th Fighter Weapons Wing, Nellis AFB, NV, and was responsible for Operational Test and Evaluation, the USAF Fighter Weapons School, the USAF Tactical Intelligence Officers School, Red Flag, the USAF Aggressor force, and the USAF Thunderbirds.

